



M-8485Se Standard OEM Print Engine



Service Manual

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Warning: This equipment complies with the requirements in Part 15 of FCC rules for a Class B computing device. Operation of this equipment in a residential area may cause unacceptable interference to radio and TV reception requiring the operator to take whatever steps are necessary to correct the interference.

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Section 1

Overview and Specifications

1.1 Overview

The SATO M-8485Se Service Manual provides information for installing and maintaining M-8485Se Thermal Transfer Print Engines. Step-by-step maintenance instructions are included in this manual with typical problems and solutions. It is recommended that you become familiar with each section in this manual before installing and maintaining the printer.

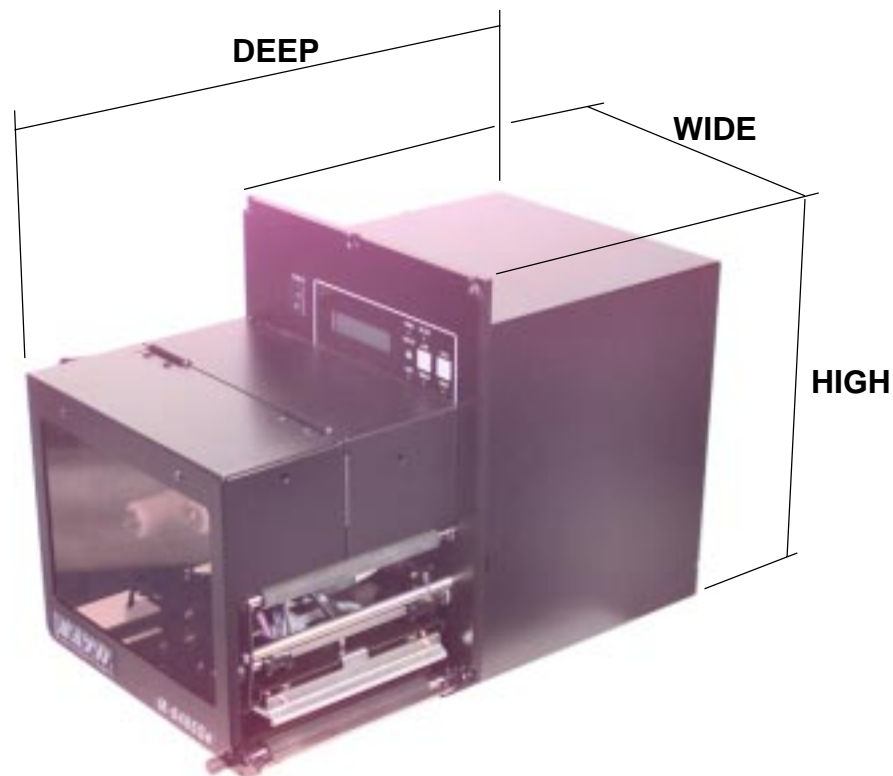
The SATO M-8485Se Print Engines are designed to be integrated into high performance on-site labeling systems. All printer parameters are user programmable, using front panel controls and DIP switches. All popular bar codes and 14 human-readable fonts, including a vector font, are resident in memory providing literally thousands of type styles and sizes.

The M-8485Se with its 203 dpi head provides an economical labeling solution for most applications. It will print on labels from 1 inch wide x .25 inches long to 5.25 inches wide x 14 inches long using internal memory. Labels up to 5.25 inches wide x 49.2 inches long can be printed by installing a PCMCIA memory card option. The maximum print width is 5.0 inches.

The sections in this manual cover the following:

- *Section 1. Overview and Specifications*
- *Section 2. Configuration*
- *Section 3. Interface Specifications*
- *Section 4. Electrical Checks and Adjustments*
- *Section 5. Mechanical Adjustments*
- *Section 6. Replacement Procedures*
- *Section 7. Factory Resets*
- *Section 8. Troubleshooting*
- *Section 9. Optional Accessories*
- *Section 10. Parts list*

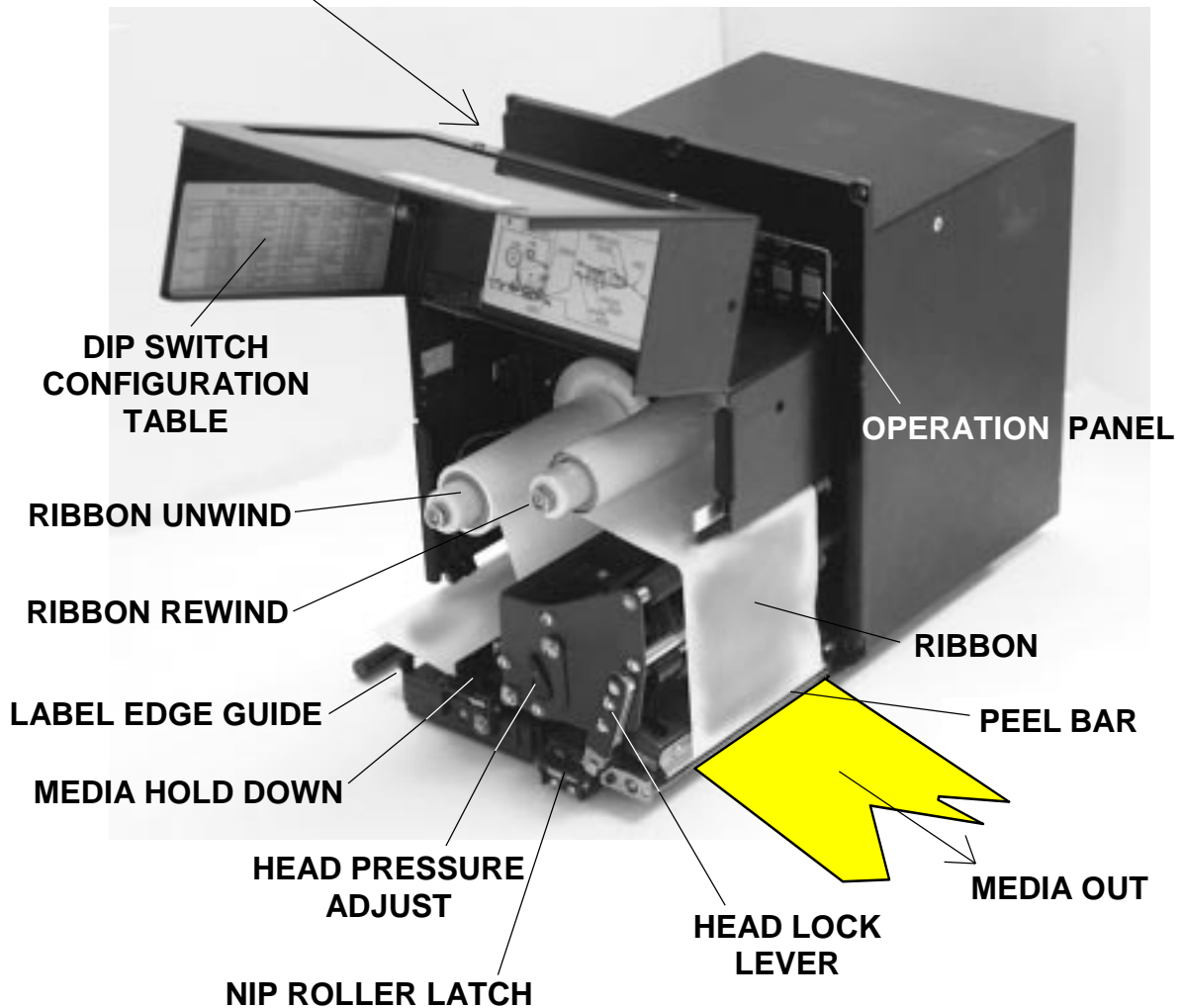
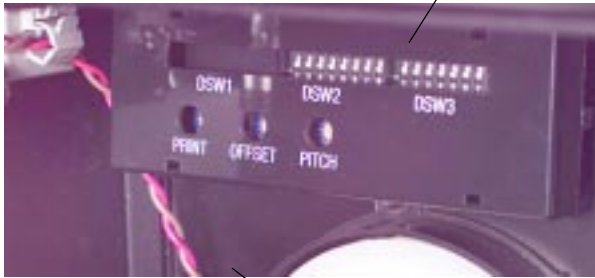
1.2 Dimensions and Power Requirements



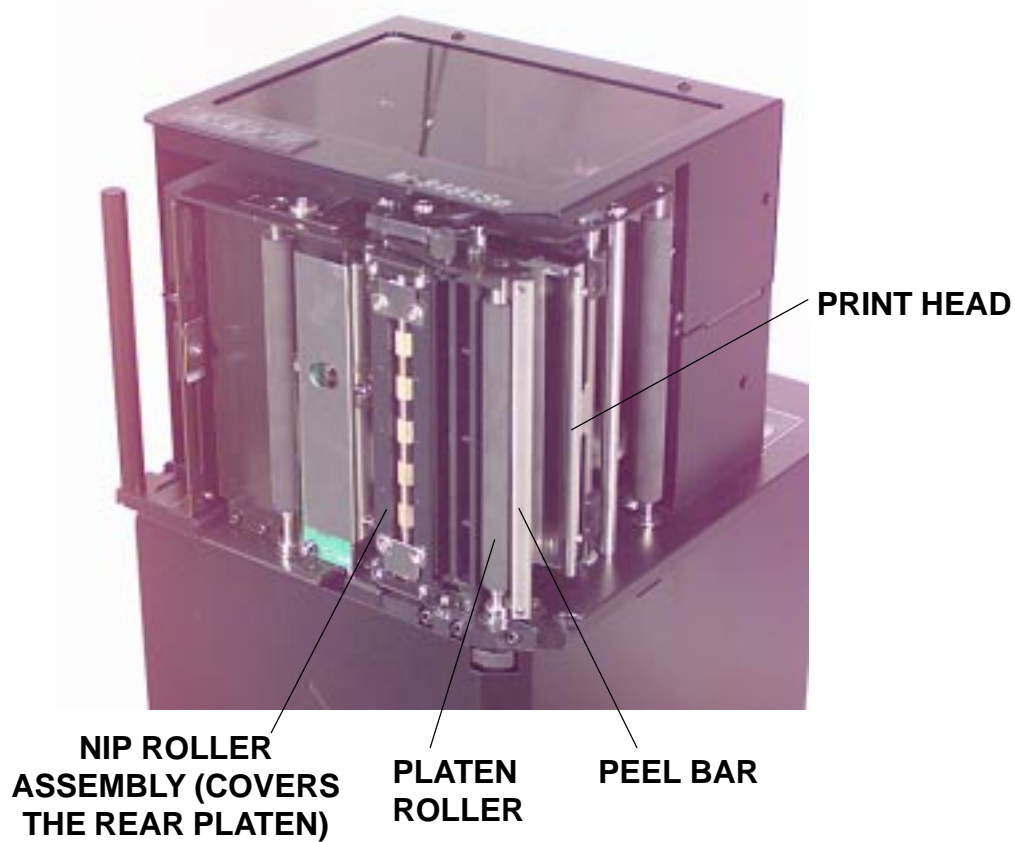
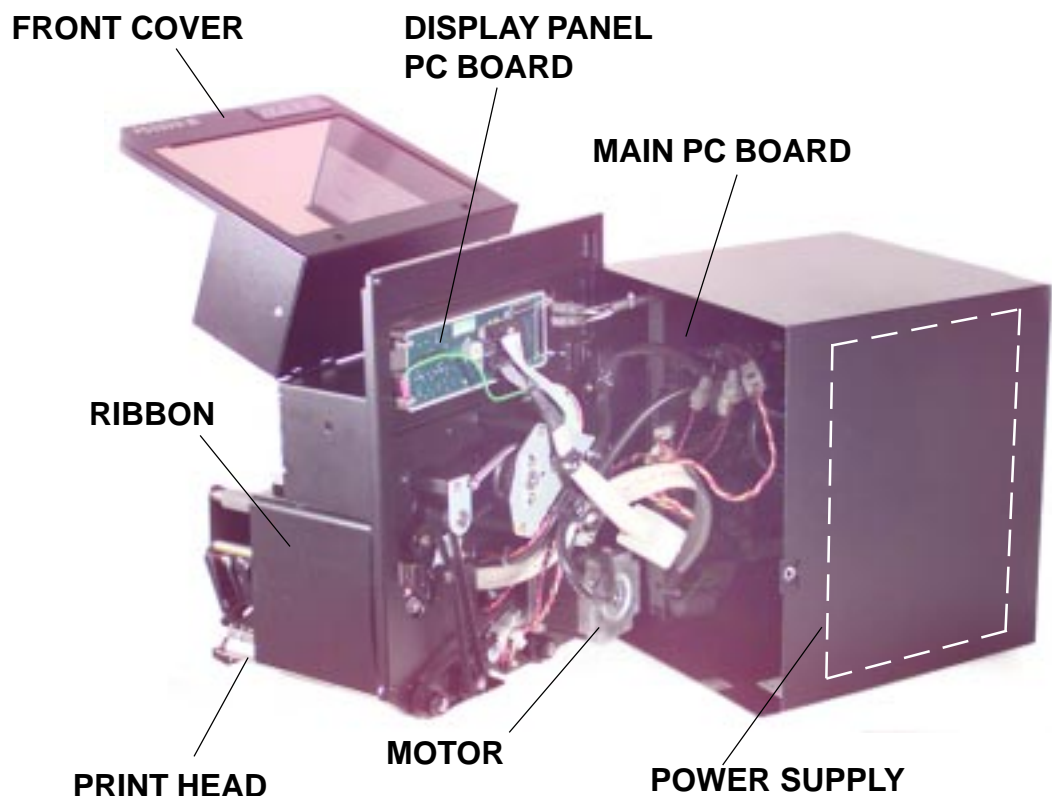
| SPECIFICATION | M-8485Se |
|--------------------|--|
| DIMENSIONS | |
| Wide | 10.4 in. (264 mm) |
| Deep | 16.1 in. (410 mm) |
| High | 11.8 in. (300 mm) |
| Weight | 25.0 lbs (11.34 Kg) |
| POWER REQUIREMENTS | |
| Voltage | 115 - 220 V (+/- 10%) 50/60 Hz (+/- 1%) |
| Power Consumption | 50W Idle 700W Operating |

1.3 Components

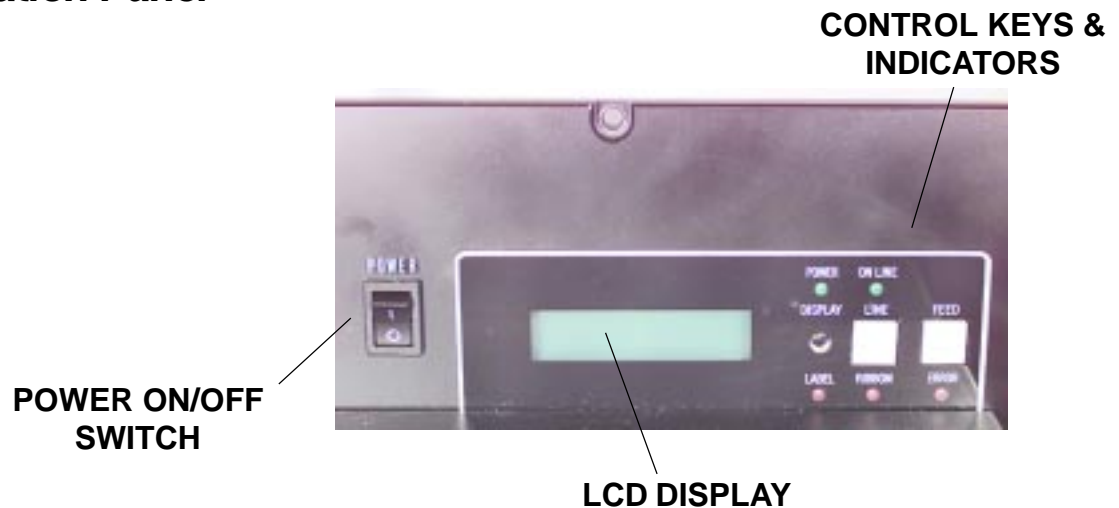
DIP SWITCH PANEL



Components



1.4 Operation Panel



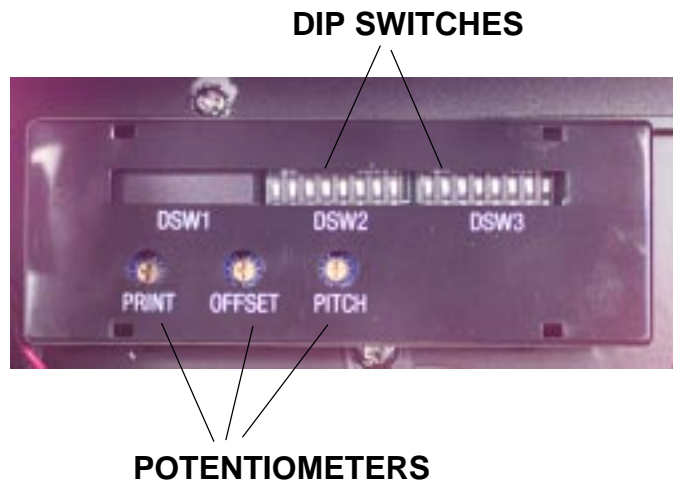
OPERATION PANEL

| | |
|--------------------|--|
| LCD Display | 2 Line x 16 Character display |
| LABEL LED | Illuminated when label is out |
| RIBBON LED | Illuminated when ribbon is out |
| ERROR LED | Illuminated when errors have occurred |
| ON-LINE LED | Illuminated when printer is On-Line |
| LINE KEY | Switches the printer On-Line or Off-Line. Can also be used as a Pause function key to stop label during the printing process. |
| FEED KEY | Feeds one blank label |

1.5 Dip Switch Panel

The DIP Switch panel is located under the front lid and contains two 8-position DIP switches and three adjustment potentiometers. Adjustment procedures for these are listed in Section 2, Configuration.

DSW1 is located on RS232C I/O Card if installed.



1.6 Input/Output Connections (Rear Panel)



EXT CONNECTOR

An external signal connector for interfacing with the label applicator system. Use the cable provided.

COVERS OPTIONAL MEMORY PCB BOARD

For PCMCIA Memory Card

INTERFACE SLOT

For Plug-In Interface Modules

SERVICE BOARD

For electrical checks and adjustments



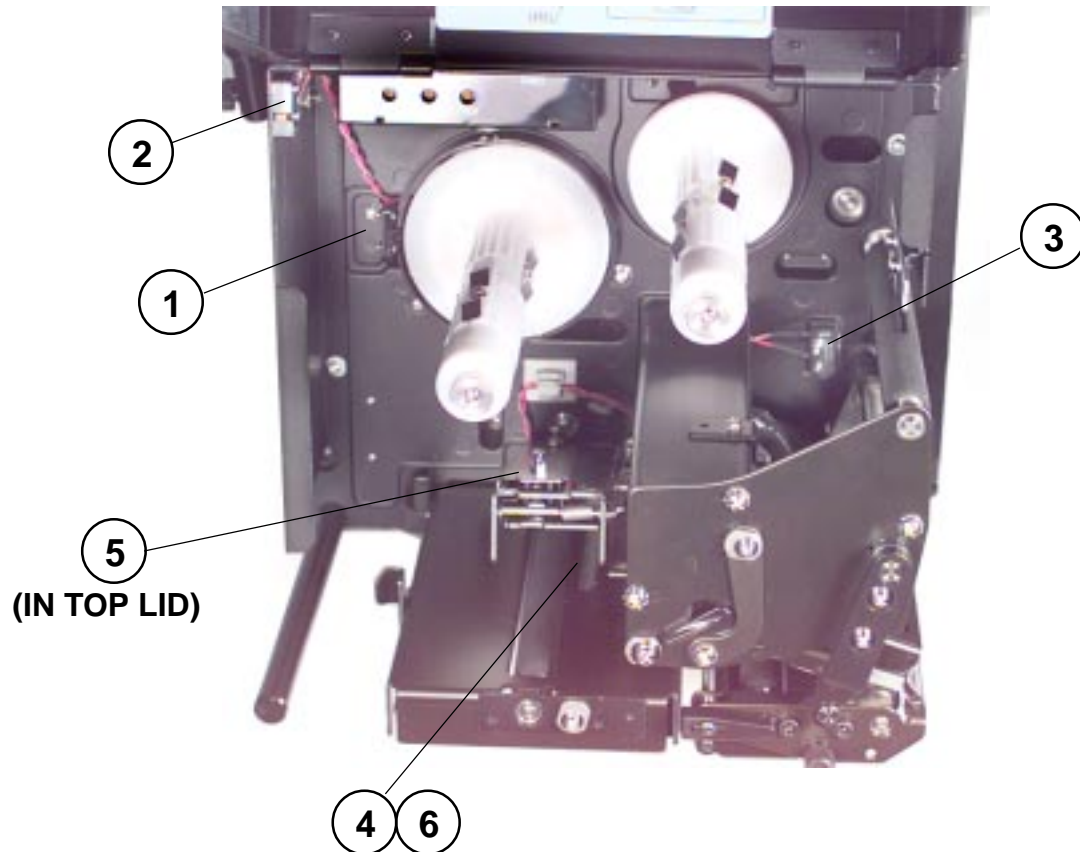
AC FUSE

To protect the printer from abnormal power input
Type 15A/250V

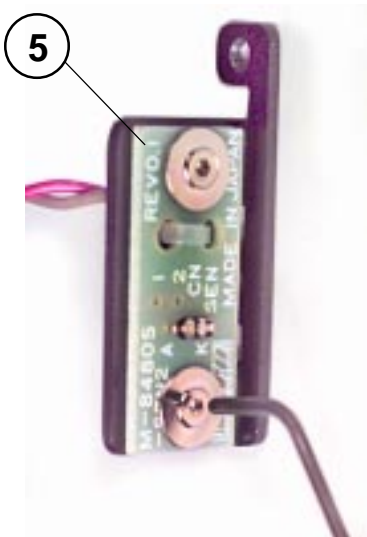
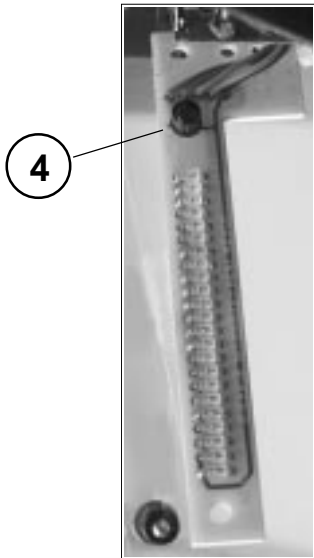
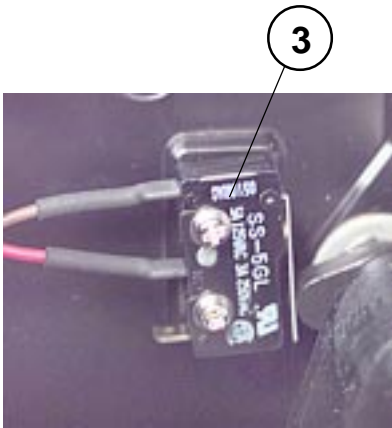
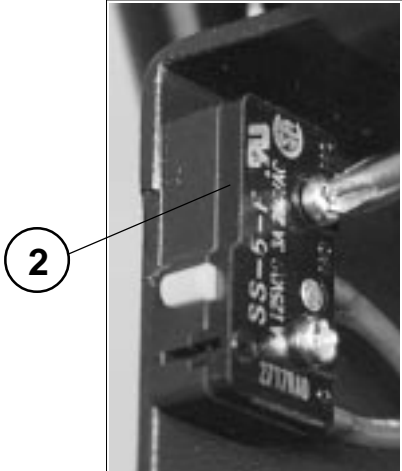
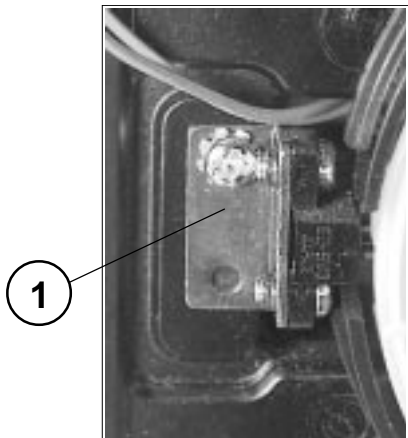
AC POWER CONNECTOR

To AC Line - Use the power cable provided

1.7 Switches and Sensors

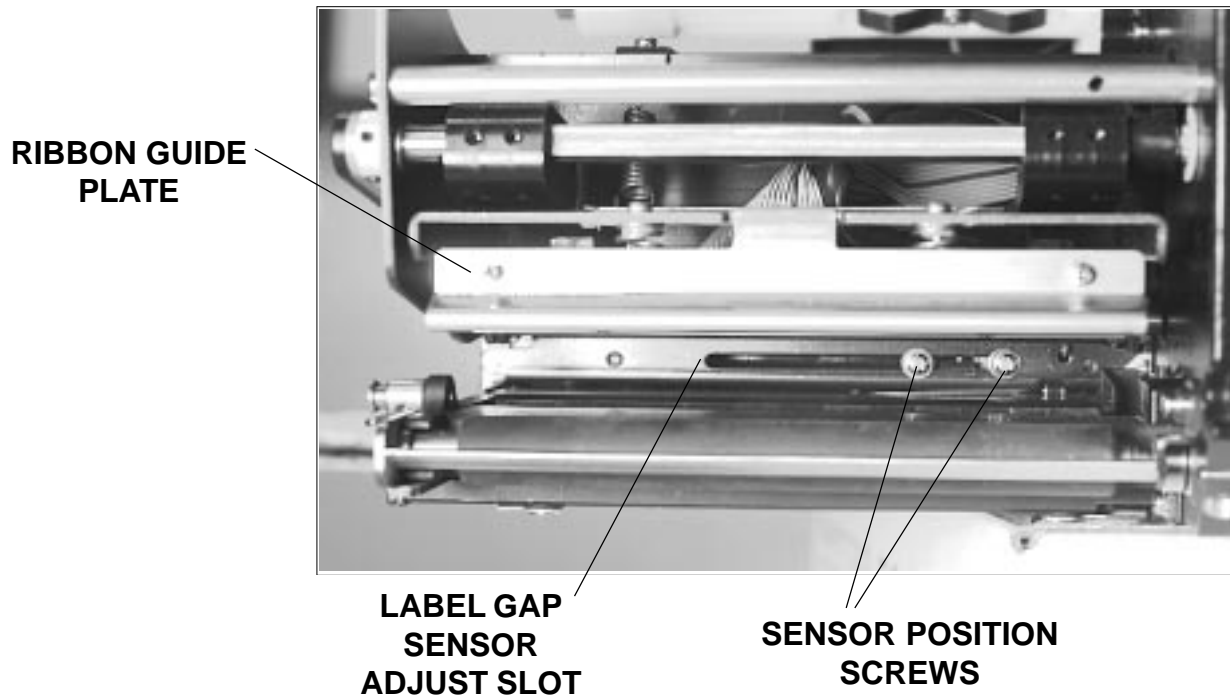


| ITEM | DESCRIPTION | REFER SECTION |
|------|--|---------------|
| 1 | Ribbon Motion Sensor | Section 6-11 |
| 2 | Cover Open Switch | Section 6-12 |
| 3 | Head Open Switch | Section 6-13 |
| 4 | Label Gap (Bot 1/2) & "Eye-Mark" Sensors | Section 6-14 |
| 5 | Label Gap (Top 1/2) | Section 6-15 |
| 6 | Label Out Sensor | Section 6-17 |



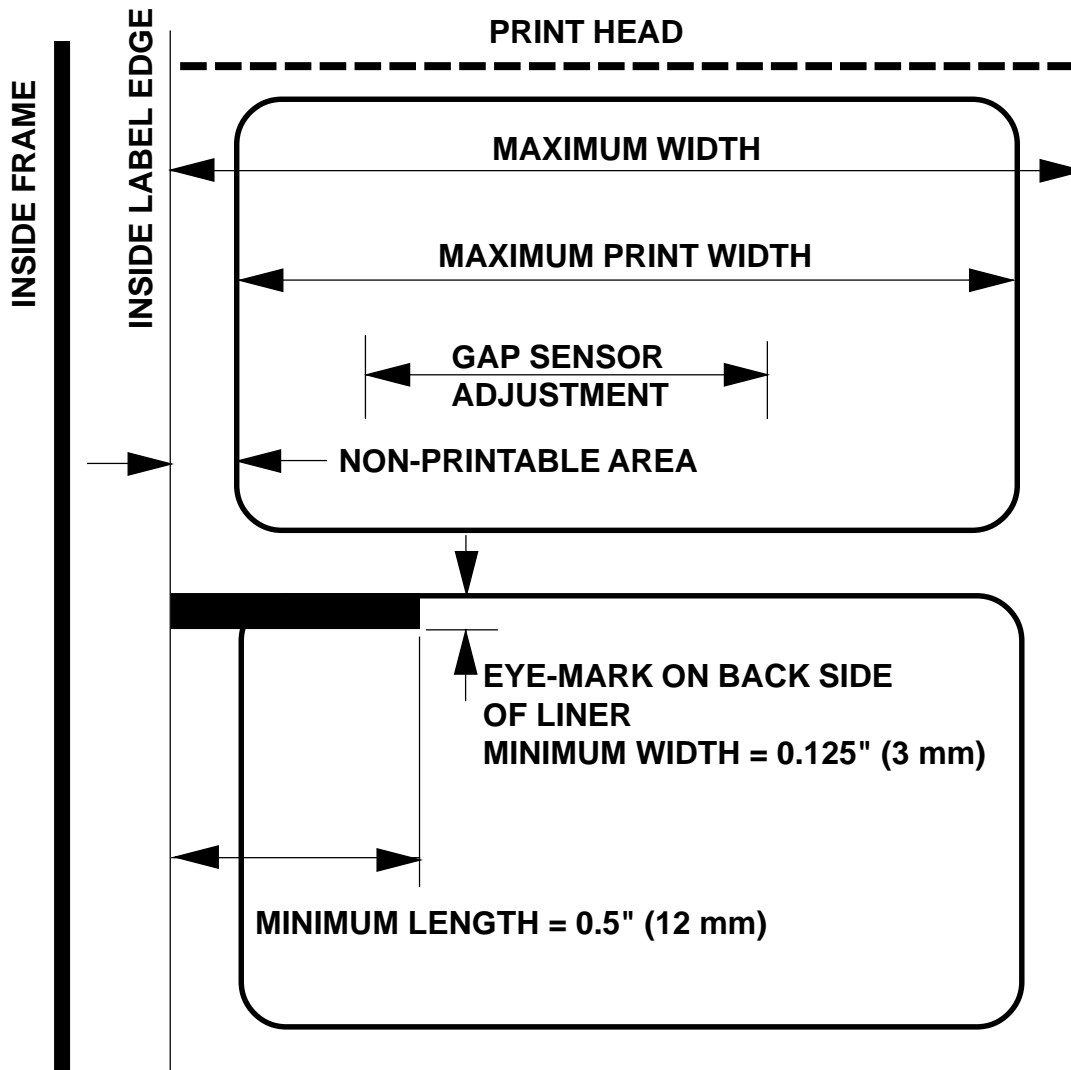
1.8 Adjusting the Label Sensor

The label gap (transmissive) sensor can be positioned over a limited range. The movable sensor assembly is mounted on the Label Hold Down and is held in position by two screws. To adjust the position of the sensor, both screws must be loosened and the sensor moved to the desired position in the slot and then the screws retightened. Adjustments to compensate for different liner opacity are done with the LCD panel.



Adjusting the Label Sensor

The M-8485Se printers can position labels using either a label gap (transmissive) or an "Eye-Mark" (reflective) sensor. The sensor used is selected by DSW2-2. The gap sensor position can be adjusted over a limited range. In addition, the signals from the sensors can be adjusted using the LCD panel to compensate for different liner opacities and/or "Eye-Mark" reflectance values.



| | M-8485Se |
|----------------------------------|--------------------------------|
| Max Label Width (includes liner) | 5.27" (134 mm) |
| Max Print Width | 5.0" (128 mm) |
| Gap Sensor Adjustment Range | 0.5" to 2.67" (14 mm to 68 mm) |
| Non-Print Area | 0.12" (3 mm) |

1.9 Ribbon

Use only SATO thermal transfer ribbons which were formulated expressly for use in all SATO printers. Use of other than approved ribbons may result unsatisfactory print quality and/or damage to the print head and may void your warranty.

1.10 Installation Considerations

Printer operation can be affected by the printer environment. The location of the printer should be free from dust, humidity and sudden vibrations. To obtain optimum results from the printer module, avoid locations influenced by:

- Direct or bright sunlight since bright light will make the label sensor less responsive and may cause the label to be sensed incorrectly.
- Excessive warm or cold temperatures can cause electrical problems within the printer. (See Section 3- Specifications).

1.11 General Printer Specifications

| SPECIFICATION | M-8485Se |
|------------------------------|--|
| PRINT | |
| Method | Direct or Thermal Transfer |
| Speed (User Selectable) | 4 to 12 ips 100 to 300 mm/s |
| Print Module (Dot Size) | .0049 in. .125 mm |
| Resolution | 203 dpi 8 dpmm |
| Maximum Print Width | 5.0 in. 128 mm 1024 dots |
| Maximum Print Length | 49.2 in. 1249 mm |
| MEDIA | |
| Minimum Width | 1.0 in. (25 mm) |
| Minimum Length | .25 in. (6 mm) |
| Maximum Width | 5.25 in 134 mm |
| Type | Die Cut Labels, Fan-Folded or Continuous |
| Maximum Caliper | .010 in. (.25 mm) |
| Max Unwind Torque | 8.8 lbs (4 Kg) with 5 in. wide labels |
| Backing Paper Rewind Tension | 400g or less |
| LABEL SENSING | |
| Transimissive See-Thru | Adjustable |
| Reflective "Eye-Mark" | Fixed |
| RIBBON | |
| Maximum Width | 5.25 in 134 mm |
| Length | 1968 ft (600 M) |
| Thickness | 4.5 micron, Face in Wind |

All specifications subject to change without notice.

General Printer Specifications

| SPECIFICATION | M-8485Se |
|--------------------------------------|------------------------------|
| ENVIRONMENTAL | |
| Operating Temperature | 41° to 104° F (5° to 40° C) |
| Storage Temperature | 0° to 104° F (-20° to 40° C) |
| Operating Humidity | 15-85% RH, non-condensing |
| Storage Humidity | Max 90% RH, non-condensing |
| Electrostatic Discharge | 8KV |
| REGULATORY APPROVALS | |
| Safety | UL, CSA, CE, TUV |
| RF/EMI | FCC Class A |
| CONFIGURATION | |
| Left to Right Hand Label Feed | Yes |
| Right to Left Hand Label Feed | Yes |

All specifications subject to change without notice.

General Printer Specifications

| SPECIFICATION | M-8485Se |
|--------------------------------------|--|
| CONTROLS AND SIGNALS | |
| On-Line | LED |
| Power | LED |
| Label | LED |
| Ribbon | LED |
| Error | LED |
| LCD Panel | 2 Line x 16 Character |
| On/Off-Line Switch | Front Panel |
| Label Feed Switch | Front Panel |
| Power On/Off Switch | Front Panel |
| POTENTIOMETER ADJUSTMENTS | |
| Print Darkness | Inside Panel |
| Pitch | Inside Panel |
| Offset | Inside Panel |
| Display | Front Panel |
| INTERFACE CONNECTIONS ⁽¹⁾ | |
| Parallel | IEEE1284 |
| Serial | RS232C (9600 to 57.6 Kbps) RS422/485 (9600 to 57.6 Kbps) |
| Serial Protocol | Hardware Flow Control (Ready/Busy) Software Flow Control (X-On/X-Off) Bi-directional |
| Ethernet | 10/100BaseT |
| Universal Serial Bus | USB Ver 1.1 |
| PROCESSING | |
| CPU | 32 Bit RISC |
| Flash ROM | 2 MB |
| SDRAM | 16 MByte |
| Receive Buffer | 2.95 MB |
| Optional Flash ROM | 4 MB |
| Optional PCMCIA Memory | 16 MB Flash or 4 MB SRAM |

(1) Plug-In Interface Modules

All specifications subject to change without notice.

1.12 Character Fonts

| SPECIFICATION | M-8485Se |
|----------------------|--|
| MATRIX FONTS | |
| U Font | (5 dots W x 9 dots H) |
| S Font | (8 dots W x 15 dots H) |
| M Font | (13 dots W x 20 dots H) |
| XU Font | (5 dots W x 9 dots H) Helvetica |
| XS Font | (17 dots W x 17 dots H) Univers Condensed Bold |
| XM Font | (24 dots W x 24 dots H) Univers Condensed Bold |
| OA Font | (15 dots W x 22 dots H) OCR-A |
| OB Font | (20 dots W x 24 dots H) OCR-B |
| AUTO SMOOTHING FONTS | |
| WB | WB Font (18 dots W x 30 dots H) |
| WL | WL Font (28 dots W x 52 dots H) |
| XB | XL Font (48 dots W x 48 dots H) Univers Condensed Bold |
| XL | XL Font (48 dots W x 48 dots H) Sans Serif |
| VECTOR FONT | |
| | Proportional or Fixed Spacing Font Size 50 x 50 dots to 999 x 999 dots Helvetica, 10 Font Variations |
| AGFA® RASTER FONTS | |
| A Font | CG Times, 8 to 72 pt |
| B Font | CG Triumvirate, 8 to 72 pt |
| DOWNLOADABLE FONTS | |
| | TrueType Fonts with Utility Program |
| CHARACTER CONTROL | |
| | Expansion up to 12X in either the X or Y coordinates Character Pitch control Line Space control Journal Print facility 0°, 90°, 180° and 270° Rotation |

All specifications subject to change without notice.

1.13 Bar Codes and Other Features

| SPECIFICATION | M-8485Se |
|-----------------------|--|
| SYMBOLOGIES | |
| | Bookland (UPC/EAN Supplemental EAN-8, EAN-13 CODABAR Code 39 Code 93 Code 128 Interleaved 2 of 5 Industrial 2 of 5 Matrix 2 of 5 MSI POSTNET UCC/EAN-128 UPC-A and UPC-E Data Matrix Maxicode PDF417 Micro PDF Truncated PDF QR Code |
| Ratios | 1:2, 1:3, 2:5 User definable bar widths |
| Bar Height | 4 to 600 dots, User programmable |
| Rotation | 0°, 90°, 180° and 270° |
| OTHER FEATURES | |
| Sequential Numbering | Sequential numbering of both numerics and bar codes |
| Custom Characters | RAM storage for special characters |
| Graphics | Full dot addressable graphics SATO Hex/Binary, .BMP or .PCX formats |
| Form Overlay | Form overlay or high-speed editing of complex formats |
| Real Time Clock | Date/Time clock for stamping labels at print time |

1.14 Optional Accessories

| ACCESSORY | M-8485Se |
|-----------------------|---|
| MEMORY EXPANSION | PCMCIA Memory Cards (up to 16MB Flash or 4MB SRAM) and 8MB Flash ROM. Can be used for Graphic File storage, print buffer expansion, format storage and downloaded TrueType fonts. |
| FACE-OUT LABEL SENSOR | Top-mounted sensor for reflective "Eye-Marks" printed on the face of the label. |

All specifications subject to change without notice.

Section 2

Configuration

2.1 Dip Switch Settings

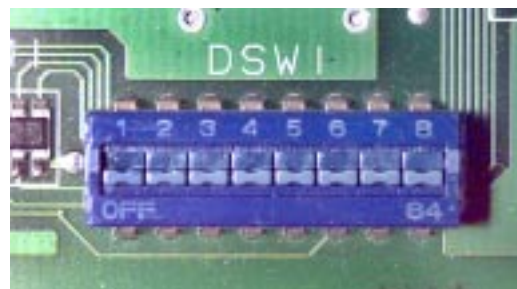
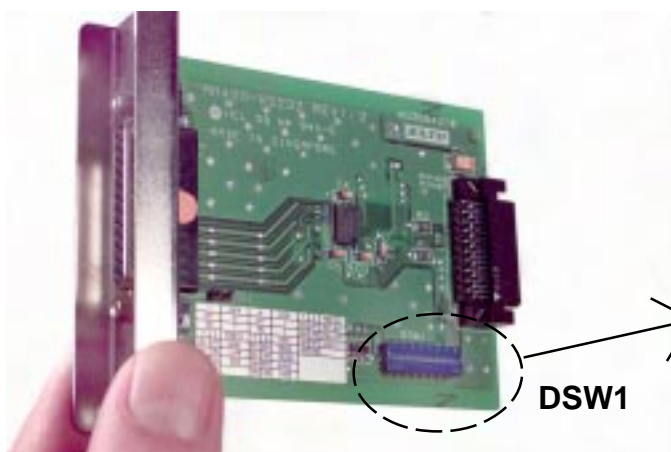
Two DIP switches (DSW2 & DSW3) are located inside the cover. These switches can be used to set:

- *Thermal transfer or direct thermal mode*
- *Head Check Mode*
- *Hex Dump Mode*
- *Label sensor enable/disable*
- *Single Job or Multi-Job Receive Buffer*
- *Operation Mode*



DIP SWITCHES

In addition, a third DIP switch (DSW1) is located on the RS232C Serial Adapter card and is used to set the RS232C transmit/receive parameters.



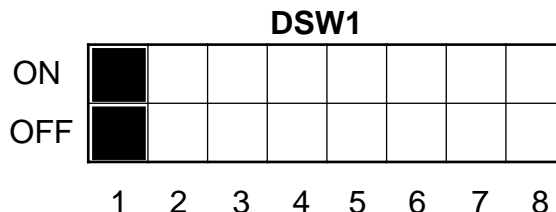
Each switch is an eight section toggle switch. The On position is always to the top. To set the switches, first power the unit Off, then position the DIP switches. Finally after placing the switches in the desired positions, power the printer back on. The switch settings are read by the printer electronics during the power-up sequence. They will not become effective until the power is cycled.

Dip Switch Settings

RS232 Transmit/Receive Setting (Located on RS232 I/F Module)

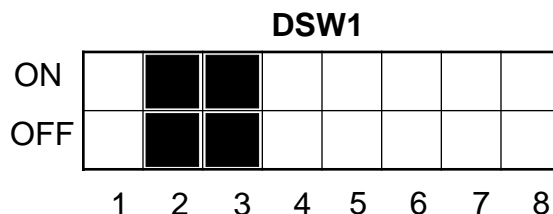
Data Bit Selection (DSW1-1): This switch sets the printer to receive either 7 or 8 data bits for each byte transmitted.

| DSW1-1 | SETTING |
|--------|-------------|
| Off | 8 data bits |
| On | 7 data bits |



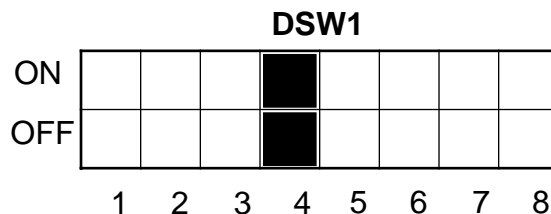
Parity Selection (DSW1-2, DSW1-3): These switches select the type of parity used for error detection.

| DSW1-2 | DSW1-3 | SETTING |
|--------|--------|----------|
| Off | Off | Disabled |
| Off | On | Even |
| On | Off | Odd |
| On | On | Not Used |



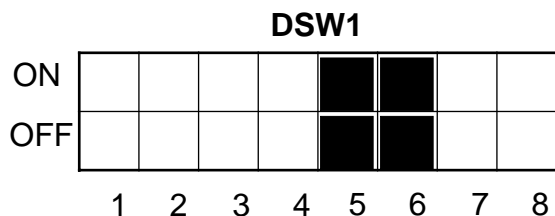
Stop Bit Selection (DSW1-4): Selects the number of stop bits to end each byte transmission.

| DSW1-4 | SETTING |
|--------|-------------|
| Off | 1 Stop Bit |
| On | 2 Stop Bits |



Baud Rate Selection (DSW1-5, DSW1-6): Selects the data rate (bps) for the RS232 port.

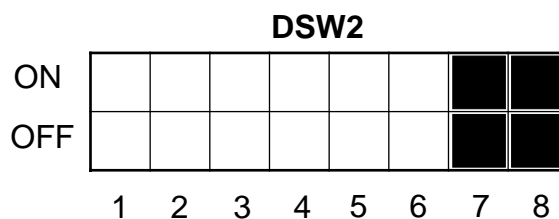
| DSW1-5 | DSW1-6 | SETTING |
|--------|--------|---------|
| Off | Off | 9600 |
| Off | On | 19200 |
| On | Off | 38400 |
| On | On | 57600 |



Protocol Selection (DSW1-7, DSW1-8): Selects the flow control and status reporting protocols.

(* Will select protocol for M-8400 if DSW2-8 is ON)

| DSW1-7 | DSW1-8 | SETTING |
|--------|--------|----------|
| Off | Off | Rdy/Bsy |
| Off | On | Xon/Xoff |
| On | Off | Bi-Com 3 |
| On | On | Bi-Com 4 |

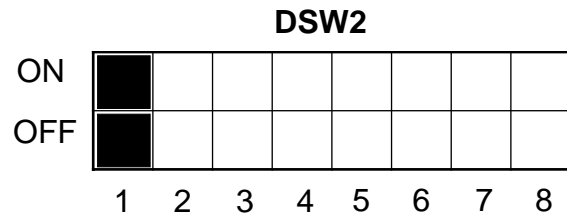


Dip Switch Settings

Printer Set up

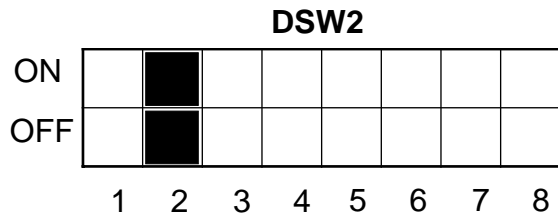
Print Mode Selection (DSW2-1): Selects between direct thermal printing on thermally sensitive paper and thermal transfer printing using a ribbon.

| DSW2-1 | SETTING |
|--------|--------------|
| Off | Therm Xfr |
| On | Direct Therm |



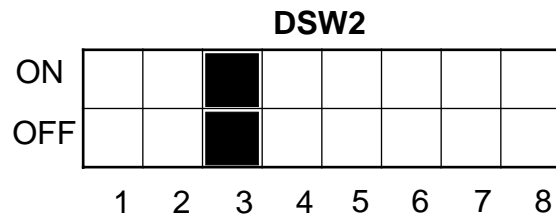
Sensor Type Selection (DSW2-2): Selects between the use of a label gap or a reflective Eye-Mark.

| DSW2-2 | SETTING |
|--------|----------|
| Off | Gap |
| On | Eye-Mark |



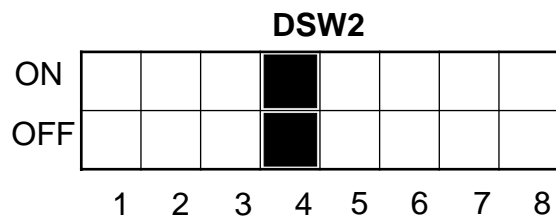
Head Check Selection (DSW2-3): When selected, the printer will check for head elements that are electrically malfunctioning.

| DSW2-3 | SETTING |
|--------|---------|
| Off | Disable |
| On | Enable |



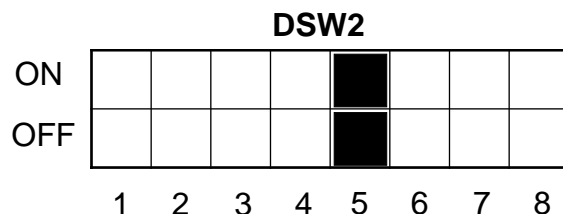
Hex Dump Selection (DSW2-4): Selects Hex Dump mode.

| DSW2-4 | SETTING |
|--------|---------|
| Off | Disable |
| On | Enable |



Receive Buffer Selection (DSW2-5): Selects the operating mode of the receive buffer. See Section 3: Interface Specifications for more information.

| DSW2-5 | SETTING |
|--------|------------|
| Off | Single Job |
| On | Multi-Job |

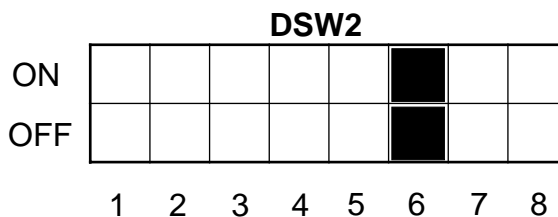


For more information about the cause of troubleshooting printer errors, see Section 8, Troubleshooting.

Dip Switch Settings

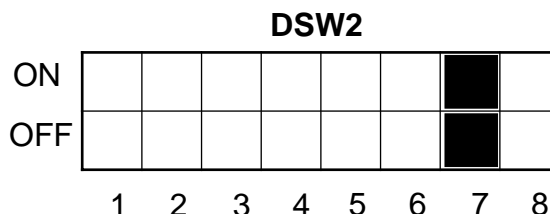
Firmware Download (DSW2-6): Places the printer in the Firmware Download mode for downloading new firmware into flash ROM.

| DSW2-6 | SETTING |
|--------|----------|
| Off | Disabled |
| On | Enabled |



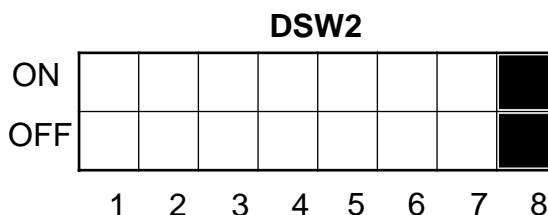
Protocol Code Selection (DSW2-7): Selects the command codes used for protocol control.

| DSW2-7 | SETTING |
|--------|----------|
| Off | Standard |
| On | Non-Std. |



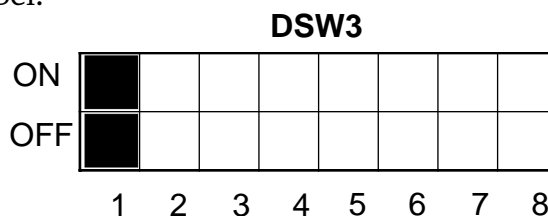
M8400S Emulation Mode (DSW2-8): For emulating earlier series software commands. Should be used only if problems are encountered when using existing software. This switch will also affect the settings selected by DSW1-7 and DSW1-8.

| DSW2-8 | SETTING |
|--------|----------|
| Off | Disabled |
| On | Enabled |

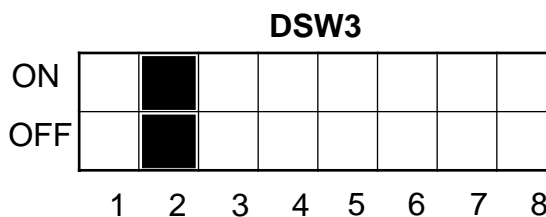


Backfeed Sequence Selection (DSW3-1): Backfeed is used to correctly position the label for application and then retract the next label to the proper print position. This operation can be performed immediately after a label is printed and used, or immediately prior to the printing of the next label.

| DSW3-1 | SETTING |
|--------|---------|
| Off | Before |
| On | After |



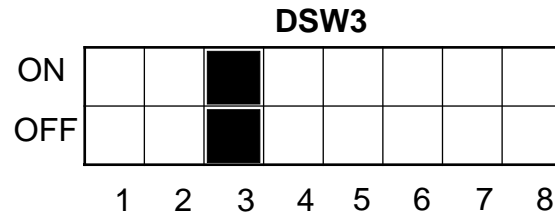
Reserved for Future Use (DSW3-2):



Dip Switch Settings

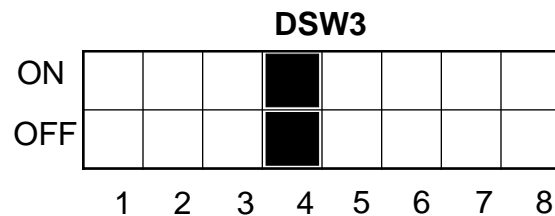
Label Sensor Selection (DSW3-3): Enables or disables the Label Pitch sensor. If the sensor is enabled, it will detect the edge of the label and position it automatically. If it is disabled, the positioning must be under software control using Line Feed commands.

| DSW3-3 | SETTING |
|--------|-------------|
| Off | Sensor Used |
| On | Not Used |



Back-Feed Selection (DSW3-4): When Back-Feed is enabled, the printer will position the label for dispensing and retract it before printing the next label. The amount of backfeed is adjustable.

| DSW3-4 | SETTING |
|--------|----------|
| Off | Enabled |
| On | Disabled |

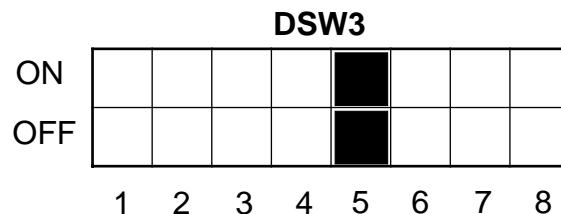


External Signal Interface

See Section 3: Interface Specifications for information on External Signals.

EXT Print Start Signal Selection (DSW3-5): Allows an external device to initiate a label print for synchronization with the applicator. See Section 3: Interface Specifications for a description of the signal level and requirements. When DSW3-5 is On, the unit is in the Continuous print mode, Backfeed is disabled and External Signals are ignored.

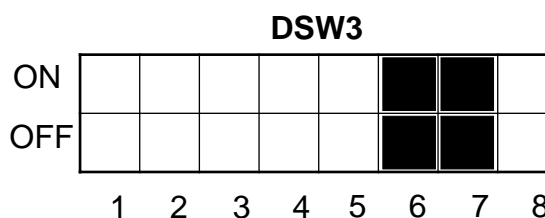
| DSW3-5 | SETTING |
|--------|----------|
| Off | Enabled |
| On | Disabled |



Dip Switch Settings

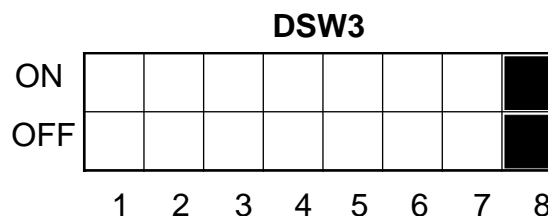
External Signal Type Selection (DSW3-6, DSW3-7): Both the polarity and signal type (level or pulse) of the external print synchronizing signal can be selected. See Section 3: Interface Specifications for a definition of signal types.

| DSW3-6 | DSW3-7 | SETTING |
|--------|--------|---------|
| Off | Off | Type 4 |
| Off | On | Type 3 |
| On | Off | Type 2 |
| On | On | Type 1 |



Repeat Print via External Signal (DSW3-8): Allows the applicator to reprint the last label of the print job. See Section 3: Interface Specifications for a description of the signal requirements.

| DSW3-8 | SETTING |
|--------|----------|
| Off | Disabled |
| On | Enabled |



2.2 Default Settings

Switch Selections

All switches are placed in the Off position (default) for shipping. This will result in the following operating configuration:

| | |
|---------------------------------------|--|
| Communications: ⁽¹⁾ | 8 data bits, no parity, 1 Stop bit, 9600 Baud ⁽¹⁾ |
| Protocol: ⁽¹⁾ | Ready/Busy |
| Sensor: | Gap Sensor |
| Receive Buffer: | Multi-Job |
| Mode: | Batch Continuous |
| Label Sensor: | Sensor Used |
| Backfeed: | Enabled |
| External Signals: | Enabled |

(1) Active only if an RS232 Interface Card is installed in the printer.

Software Default Settings - The printer stores any software settings upon receipt from the host and uses them until they are again changed by receipt of a command containing a new setting. These settings are stored in non-volatile memory and are not affected by powering the printer off. The printer may be reset to use the default software settings by depressing the **LINE and FEED** keys simultaneously while powering the printer on. You will be asked to confirm that you want the printer default settings by selecting either **YES** or **NO** by using the LINE key to step the underline cursor to the desired setting. If you select YES and press the FEED key, the following default configuration will be stored:

| | M-8485Se |
|-----------------|------------------------------------|
| Print Darkness | 2 |
| Print Speed | 6 in. per sec. |
| Print Reference | Vertical = 0000, Horizontal = 0000 |
| Zero | Slash |
| Auto On-Line | Enabled |

Once the default operation is completed, a **DEFAULT SETTING COMPLETED** message will be displayed on the LCD panel and three "beeps" will be heard. The printer should be powered off while this message is being displayed. This saves the default settings in the EEPROM where they will be automatically loaded the next time the printer is powered on.

**DEFAULT SETTING
COMPLETED**

2.3 Potentiometer Adjustments

Pitch

After the pitch has been set with the LCD Control Panel, it is sometimes desirable to make minor adjustments. This can be done using the **PITCH** potentiometer on the front panel. This potentiometer is set at the factory so that it has a range of $\pm 3.75\text{mm}$. The midpoint setting should have no effect on the pitch. Turning the potentiometer all the way clockwise should move the print position 3.75mm up towards the top edge of the label. turning it all the way counterclockwise should move the print position down 3.75mm.

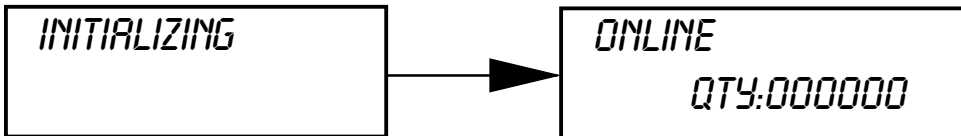
| STEP | PROCEDURE |
|------|--|
| 1. | <p>Press the FEED key while simultaneously turning ON the power switch. When the printer beeps, release the keys. The following screens will appear.</p> <div style="display: flex; align-items: center; justify-content: center;"> <div style="border: 1px solid black; padding: 10px; margin: 5px;">INITIALIZING</div> <div style="margin: 0 10px;">→</div> <div style="border: 1px solid black; padding: 10px; margin: 5px;">TEST PRINT MODE SETTING</div> </div> |
| 2. | <p>Press the LINE key to select the type of Test Label you want to print, BARCODE, HEADCHECK, or MEMORY. After you make your selection press the FEED key.</p> |
| 3. | <p>Press the LINE key to select the Test Label Size. The default is 12cm. After the size is selected, press the FEED key to accept the selection and the printer will display the next screen.</p> <div style="border: 1px solid black; padding: 10px; margin: 10px auto; width: fit-content;"> <p style="text-align: center;">USER TEST PRINT PRESS FEED KEY</p> </div> |
| 4. | <p>Press the FEED key and the printer will begin to print test labels continuously.</p> |
| 5. | <p>Adjust the PITCH potentiometer on the front panel until the first print position is at the desired location on the label. If the potentiometer does not have enough range, then you will have to change the pitch setting using the front panel display.</p> |
| 6. | <p>Press the FEED key to stop printing.</p> |
| 7. | <p>To exit the Test Label mode, turn the power off, then back on.</p> <p>Adjusting the PITCH potentiometer will affect the stop position of the label.</p> |

Potentiometer Adjustments

Backfeed Offset

When a label is printed it must be correctly positioned for dispensing and application. The Backfeed adjustment is used to position the label so that it is fully dispensed and ready for application. It may then be necessary to reposition the next label before printing. The Backfeed (repositioning of the label) operation is enabled if DSW3-4 is in the Off position. If Backfeed is enabled, placing DSW3-1 in the Off position will cause the backfeed operation to be performed immediately before each label is printed. If DSW3-1 is in the On position, the backfeed operation is performed as soon as the dispensed label has been printed and taken from the printer.

The amount of backfeed is controlled by the OFFSET potentiometer on the DIP Switch Panel inside the cover. When turned all the way clockwise, the amount of backfeed is +3.75mm and when turned all the way counterclockwise the amount of backfeed is -3.75.

| STEP | PROCEDURE |
|------|---|
| 1. | Turn the printer ON . The printer will beep and the following screens will display.  |
| 2. | Press the LINE key to place the printer in the Off Line position. |
| 3. | Press the FEED key to feed out a blank label. |
| 4. | Adjust the position using the OFFSET potentiometer on the front control panel and feed another label by depressing the FEED key. Repeat this procedure until the label is fully released from the liner. |

Display

This potentiometer is used to adjust the contrast of the LCD display for optimum viewing under various lighting conditions.

Print

This PRINT potentiometer is used to adjust the duration the elements are energized for printing. It provides a continuous range of adjustment. Maximum print darkness is obtained by turning the potentiometer all the way clockwise. Turning the potentiometer all the way counterclockwise will give the lightest print.

NOTE: *The PRINT potentiometer adjustment will affect the darkness in all the command code speed and darkness ranges.*

2.4 LCD Panel Printer Configuration

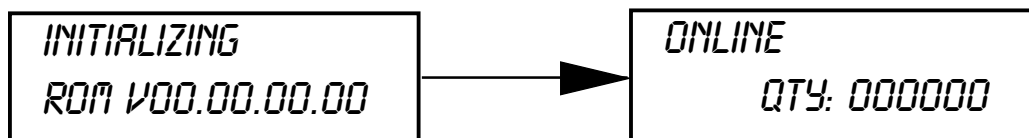
The LCD Panel is used by the operator in conjunction with the **LINE** and **FEED** switches to manually enter printer configuration settings. Many of the settings can also be controlled via software commands and in the case of conflict between software and control panel settings, the printer will always use the last valid setting. If you load a label job that includes software settings and then enter a new setting via the LCD Panel, the manually set values will be used by the printer. If you set the values manually and then download a job with software settings, the software settings will be used.

There are eleven modes of operation. To enter the desired mode, the KEY SEQUENCE combination listed in the table below must be performed. The initial LCD display message is shown for each mode.


| MODE | KEY SEQUENCE | INITIAL DISPLAY | PAGE |
|--------------------------|------------------------------------|--------------------------------------|------|
| Normal Mode | POWER | ONLINE QTY:000000 | 2-11 |
| M8400 Compatible Mode | DSW2-8 + POWER | ONLINE QTY:000000 | 2-14 |
| Advanced Mode | LINE + POWER | ADVANCED MODE | 2-15 |
| User Test Print Mode | FEED + POWER | TEST PRINT MODE CONFIGURATION | 2-35 |
| Default Setting Mode | LINE + FEED + POWER | DEFAULT SETTING YES NO | 2-37 |
| Maintenance Mode | DSW2-4 ON + LINE + FEED + POWER | MAINTENANCE MODE DIPSW2-4 ON->OFF | 2-38 |
| Clear Non-Standard Mode | DSW2-7 ON + LINE + FEED + POWER | ALT. PROTOCOL DEFAULT COMPLETE | 2-40 |
| Hex Dump Mode | DSW2-4 ON + POWER | ONLINE QTY:000000 | 2-41 |
| Download Mode | DSW2-6 + POWER | FLASH DOWNLOAD READY | 2-42 |
| User Download Mode | DSW2-7 ON + POWER + LINE | USER DOWNLOAD PRESS THE LINE KEY | 2-43 |
| Label Out Sensor Setting | DSW2-4 ON + FEED + POWER | LABEL OUT SENSOR | 2-44 |

LCD Panel Printer — Normal Mode

When the printer is first powered on it displays the INITIALIZING screen then immediately displays the ONLINE mode. The user can access the User Settings using the following procedures.




The LCD Panel will display the ONLINE status on the top line of the display. The bottom line will contain the label quantity (QTY) status. The message will be changed to OFFLINE whenever the printer is switched offline by depressing the LINE key. As soon as a print job is received, the QTY message will indicate the number of labels to be printed. As soon as the label job begins to print, the display will indicate the number of labels remaining in the print job that remain to be printed.

| STEP | PROCEDURE |
|------|---|
| 1. | <p>The printer is first taken offline by pressing the LINE key once. The display will change to OFFLINE.</p>  |
| 2. | <p>Press the LINE and FEED keys simultaneously for more than one second. The printer now displays the first USER mode adjustment (Print Darkness).</p> |

Print Darkness Setting

There are three **Darkness** (or heat range) settings on the printer. The higher numbers represent darker settings. The current setting is indicated by a line under one of the range settings.

To change the setting perform the following steps:

| STEP | PROCEDURE |
|------|---|
| 1. | <p>Use the LINE key to step the underlined cursor to the desired setting.</p> <div style="margin-left: 40px;"> 1 = Light 2 = Medium 3 = Dark </div>  |
| 2. | <p>Once the correct setting is underlined, press the FEED key to accept the setting and advance to the next adjustment.</p> |

LCD Panel Printer— Normal Mode

Print Speed Adjustment

There are five **Speed** settings on the printer. The setting is listed on the bottom line of the display. The current setting is indicated by an underline under one of the speed settings. To change the setting:

| STEP | PROCEDURE |
|------|--|
| 1. | <p>Use the LINE key to step the underlined cursor to the desired speed setting.</p> <div style="display: flex; align-items: center;"> <div style="margin-right: 20px;"> <p>4 = 4 in/s (100mm/s)</p> <p>6 = 6 in/s (150mm/s)</p> <p>8 = 8 in/s (200mm/s)</p> <p>10 = 10 in/s (250mm/s)</p> <p>12 = 12 in/s (300mm/s)</p> </div> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>PRINT SPEED</p> <p>4 6 8 10 12</p> </div> </div> |
| 2. | Once the correct setting is underlined, press the FEED key to accept the setting and advance to the next adjustment. |

Pitch Offset Adjustment

The label pitch is the distance from the leading edge (the edge that comes out of the printer first) of a label and the leading edge of the next label. The leading edge position of the label can be adjusted relative to the print head +/- 49mm in increments of 1mm. Once the position is set, it can be fine adjusted +/- 3.75mm using the PITCH potentiometer on the adjustment panel.

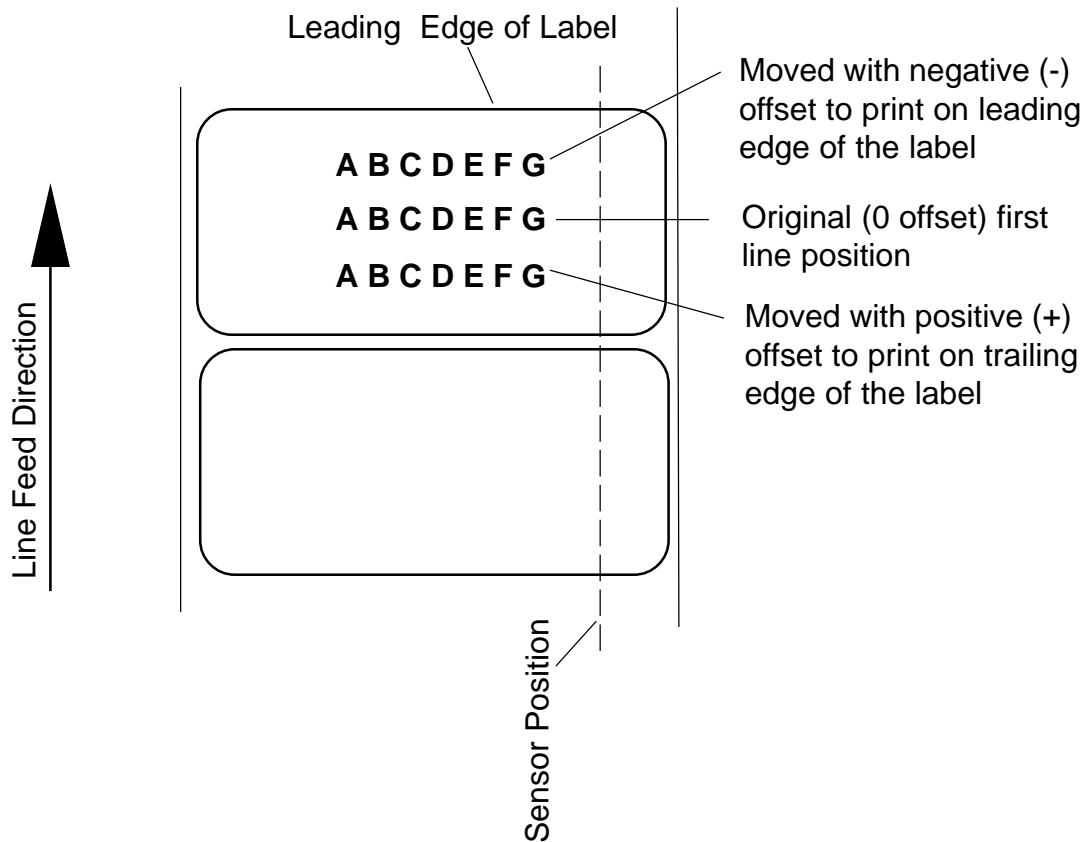
| STEP | PROCEDURE |
|------|---|
| 1. | The underline cursor will initially be positioned underneath the Pitch Direction setting. Use the LINE key to step the underline to either the positive (+) or negative (-) selection. A position selection moves the leading edge of the label forward (away from the print head) while a negative selection moves the leading edge of the label back into the mechanism. |
| 2. | Once the correct setting is underlined, press the FEED key to accept the setting and advance to the Offset adjustment. |
| 3. | Use the LINE Key to step the first digit of the counter to the desired setting. The display will increment one step each time the LINE key is pressed. The reading will advance to a setting of 4 after which it will automatically wrap and start at 0 again. |

PITCH OFFSET

 00mm

Pitch Offset Adjustment

| STEP | PROCEDURE |
|------|---|
| 4. | <p>Press the FEED key to accept the setting and advance the cursor to the second digit. Again use the LINE key to step to the desired setting. Once it is correct, press the FEED key to advance to the next adjustment.</p> <p>Print a test label after completing the adjustments to ensure it is correct.</p> |



LCD Panel Printer — Normal Mode

Cancel Print Job

If the printer has a print job(s) loaded in memory, selecting YES will cause the job(s) to be cleared. The default selection is NO. Make sure that you want to cancel the print job before selecting YES as the job cannot be recovered and will have to be retransmitted to the printer.

To cancel the print, perform the following steps:

```
CANCEL PRINT JOB
  YES    NO
```

| STEP | PROCEDURE |
|------|---|
| 1. | Use the LINE key to step the underlined cursor to either No or Yes . |
| 2. | Once the correct setting is underlined, press the FEED key to accept the setting. |
| 3. | After the print job(s) have been cleared from memory, the printer will display a COMPLETED message for 3 seconds and then return to the initial ONLINE Normal Mode. |

```
CANCEL PRINT JOB
  COMPLETED
```

If you wish to change any of the settings, you must enter the User mode again by taking the printer OFFLINE and simultaneously pressing **FEED** and **LINE** keys.

LCD Panel Printer — M8400 Compatible Mode

To enter the M8400 Compatible Mode:

| STEP | PROCEDURE |
|------|---|
| 1. | Place DSW2-8 in the on position. |
| 2. | Turn on the power to display the following screens. |

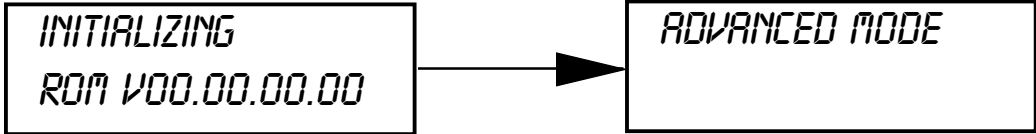
```
INITIALIZING
ROM V00.00.00.00
```

```
ONLINE
  QTY:000000
```

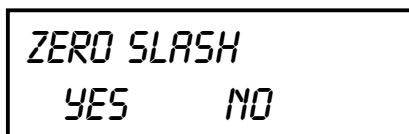

LCD Panel Printer— Advanced Mode

Advanced mode is provided to make adjustments that require only occasional adjustments. Since they affect the basic operation of the printer, the procedure for entering this mode is designed to prevent someone from accidentally changing the settings.

To Enter Advanced Mode:

| STEP | PROCEDURE |
|------|---|
| 1. | Press the LINE key while simultaneously turning the power on. When the printer emits one long beep, release the LINE key to display the first screen.  |
| 2. | Press the FEED key to display the Zero Slash display. |

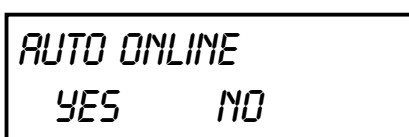
Zero Slash



This setting determines if a zero is printed with a slash or without a slash. This setting can also be controlled via software commands. When YES is selected, the printer internal fonts will have a slash through the center of the zero character.

| STEP | PROCEDURE |
|------|---|
| 1. | Use the LINE key to step the underlined cursor to either Yes or No . |
| 2. | Once the correct setting is underlined, press the FEED key to accept the setting and advance to the Auto Online display. |

AutoOnline



This setting determines the mode in which the printer powers up. If YES is selected the printer powers up in the ONLINE mode and is ready to print. If NO is selected, the printer powers up in the OFFLINE mode and must be manually placed in the ONLINE mode by pressing the LINE key before it is ready to print.

| STEP | PROCEDURE |
|------|--|
| 1. | Use the LINE key to step the underline to either the YES or NO selection. |
| 2. | Once the correct setting is underlined, press the FEED key to accept the setting and advance the display to the Offset display. |

LCD Panel Printer — Advanced Mode

Print Offset



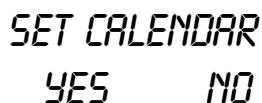
PRINT OFFSET
V:+0000 H:+0000

Vertical Offset is the distance down from the leading edge (the edge of the label that comes out of the printer first) to the first vertical print position. A positive setting moves the first print position down the length of the label while making it negative moves it up the length of the label.

Horizontal Offset is the distance that the label image is shifted either to the right or left on the label. For a positive setting the image is shifted to the left (towards the inside edge of the label for a right-hand printer). For a negative setting the image the image is shifted to the right (towards the outside edge of the label). This setting changes the base reference point for all subsequent label jobs. The effect is identical to the <ESC>A3 Base Reference point command. Since the printer moves the label in discrete steps equal to the size of the print dot, the units of measure for Vertical and Horizontal Offset distance is dots. The maximum values that can be set for each is +/-800.

| STEP | PROCEDURE |
|------|--|
| 1. | Use the LINE key to step the first digit of the counter to the desired setting. The display will increment one step each time the LINE key is pressed. |
| 2. | Press the FEED key to accept the setting and advance the cursor to the second digit. Again use the LINE key to step to the desired setting. Once it is correct, press the FEED key to advance to the next adjustment. |
| 3. | Once the setting is correct, press the FEED key to accept the setting and advance to the next display. |
| | Print a test label after completing the adjustments to ensure it is correct. <i>Note: This setting can be overridden by the Base Reference Point Command.</i> |

Set Calendar



SET CALENDAR
YES NO

The Calendar is an standard feature in M-8485Se printers allowing the date and time to be set manually using the LCD Display or via the <ESC>WT Calendar Set command. The last setting, set either manually via software command, received by the printer will be the value used. The format of the display is YY/MM/DD hh:mm (Year/Month/Day/hours:minutes). The date format is fixed and cannot be changed.

To enable the Calendar feature, press the **LINE** key until the underline cursor is beneath the YES. If the Calendar feature is to be disabled, press the **LINE** key until the cursor is underneath the NO. When the desired setting is selected, Press the **FEED** key.

LCD Panel Printer— Advanced Mode

Set Calendar

(Continued)

Calendar
00/00/00 00:00

| |
|----------------------------|
| CALENDAR 00/00/00 00:00 |
|----------------------------|

| STEP | PROCEDURE |
|------|--|
| 1. | Year - The first display shown will have the two digit year selection underlined. You can scroll through the dates by pressing the LINE key. The year number will increase by one each time the LINE key is pressed until it reaches its maximum legal value (i.e., "99" for the year digits) at which point it will wrap around to the "00" setting. |
| 2. | Month - After you have set the correct year, pressing the FEED key will advance the underline cursor to the two digit Month position. You can scroll through the numbers corresponding to the month by pressing the LINE key. The month number will increase by one each time the LINE key is pressed until it reaches a value of "12" at which point it will wrap around to the "01" setting. |
| 3. | Day - After you have set the correct month, pressing the FEED key will advance the underline cursor to the two digit Day position. You can scroll through the numbers corresponding to the month date by pressing the LINE key. The date number will increase by one each time the LINE key is pressed until it reaches a value of "31" at which point it will wrap around to the "01" setting. |
| 4. | Hour - After you have set the correct date, pressing the FEED key will advance the underline cursor to the two digit Hour position. You can scroll through the numbers corresponding to the hour (using a 24 hour clock) by pressing the LINE key. The hour number will increase by one each time the LINE key is pressed until it reaches a value of "24" at which point it will wrap around to the "01" setting. |
| 5. | Minute - After you have set the correct hour, pressing the FEED key will advance the underline cursor to the two digit Minute position. You can scroll through the numbers corresponding to the hour by pressing the LINE key. The minute number will increase by one each time the line key is pressed until it reaches a value of "60" at which point it will wrap around to the "01" setting. |
| 6. | After you have set the minutes, pressing the FEED key will accept the setting and advance to the Ignore CR/LF selection. |

LCD Panel Printer — Advanced Mode

Ignore CR/LF

```

IGNORE CR/LF
YES      NO

```

This setting tells the printer to strip out all carriage return/line feed pairs (CRLF) from the data stream, including graphics and 2D bar codes. It is used primarily to maintain compatibility with earlier models of SATO printers.

| STEP | PROCEDURE |
|------|---|
| 1. | Use the LINE key to step the underlined cursor to either YES or NO. |
| 2. | Once the desired setting is underlined, press the FEED key to accept the setting and advance to the Character Pitch display. |

Character Pitch

```

CHARACTER PITCH
PROP    FIXED

```

This setting allows you to set the default character pitch to either fixed character spacing or proportional character spacing.

| STEP | PROCEDURE |
|------|---|
| 1. | Use the LINE key to step the underlined cursor to the desired setting. |
| 2. | Once the desired setting is underlined, press the FEED key to accept the setting and return to the Advanced Mode Display. <i>Note: This command can be overridden by the <ESC>PR or <ESC>PS Character Pitch Commands.</i> |

Exit Advanced Mode

```

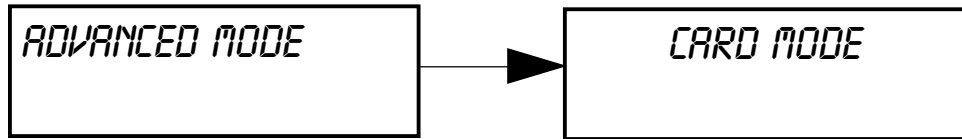
ADVANCED MODE

```

To exit the Advanced Mode, power off the printer, then back on.

LCD Panel Printer —Card Mode

The Card Mode allows the operator to manage the Expanded Memory (PCMCIA Card or Internal Expanded Flash ROM). The Card Mode is entered from the Advanced Mode display by pressing the **LINE** key once.



The Card Mode display indicates that the printer is in the Card Mode. To advance to the Mem Select (CC1), press the **FEED** key.

Mem Select (CC1)



This selection determines which type of optional expanded memory will be addressed as "CC1" in the command streams. The CARD selection specifies the optional PCMCIA card as CC1 and the optional Expanded Flash ROM as CC2. The Memory selection specifies the optional Expanded Flash ROM as CC1 and the optional PCMCIA card as CC2.

| STEP | PROCEDURE |
|------|--|
| 1. | Use the LINE key to step the cursor to the desired setting (Card or Memory). |
| 2. | Once the desired setting is underlined, press the FEED key to accept the setting and advance the display. |

LCD Panel Printer —Card Mode

Card ->MemoryCopy
TrueTypeFont Y/N

CARD ->MEMORYCOPY
 TRUETYPEFONT Y/N

This selection allows you to copy TrueType fonts from the PCMCIA Memory card installed in the Memory Card slot (on the rear of the printer) to the optional Flash ROM.

| STEP | PROCEDURE |
|------|--|
| 1. | <p>Use the LINE key to step the underlined cursor to the desired setting. IF Yes is selected, the printer will enter the Card Copy mode.</p> <p>If No is selected, the display will advance to <i>Card to Memory Copy SATO Font</i> mode. Press the FEED key to accept the selection and advance the display.</p> |
| 2. | <p>Confirm your selection by stepping the underline cursor to the Yes selection. If you select No, the display will return to the previous selection.</p> <div data-bbox="621 890 1027 1022" data-label="Text"> <p>COPY START YES NO</p> </div> |
| 3. | <p>Press the FEED key to accept the selection. If Yes was selected, the copy process will start.</p> <div data-bbox="621 1134 1027 1266" data-label="Text"> <p>TRUETYPEFONTCOPY COPYING</p> </div> |
| 4. | <p>Once the copy process is completed, press the FEED key to advance the display.</p> <div data-bbox="621 1377 1027 1509" data-label="Text"> <p>TRUETYPEFONTCOPY COMPLETED</p> </div> |
| 5. | <p>If an error is encountered in the copy process, one of the following messages will be displayed on the second line.</p> <div data-bbox="621 1638 1027 1770" data-label="Text"> <p>CARD COPY/FORMAT XXXXXXXX ERROR</p> </div> <p>R/W Error Indicates a Read/Write error occurred. No Card Error Indicates no card was recognized. Mem Full Error Indicates that there is insufficient memory available.</p> |

LCD Panel Printer — Card Mode

Card ->MemoryCopy
SatoFont Y/N

CARD ->MEMORYCOPY
 SATOFont Y/N

This selection allows you to copy SATO fonts from the PCMCIA Memory card installed in the Memory Card slot (on the rear of the printer) to the optional Flash ROM.

| STEP | PROCEDURE |
|------|--|
| 1. | <p>Use the LINE key to step the underlined cursor to the desired setting. IF Yes is selected, the printer will enter the Card Copy mode.</p> <p>If No is selected, the display will advance to Card->MemoryCopy All mode.</p> |
| 2. | <p>Confirm your selection by stepping the underline cursor to the Yes selection. If you select No, the display will return to the previous selection.</p> <div data-bbox="769 827 1170 957" data-label="Text"> <p>COPY START YES NO</p> </div> |
| 3. | <p>Press the FEED key to accept the selection. If Yes was selected, the copy process will start.</p> <div data-bbox="769 1037 1170 1167" data-label="Text"> <p>SATO FONT COPY COPYING</p> </div> |
| 4. | <p>Once the copy process is completed, press the FEED key to advance the display.</p> <div data-bbox="769 1262 1170 1392" data-label="Text"> <p>SATO FONT COPY COMPLETED</p> </div> |
| 5. | <p>If an error is encountered in the copy process, one of the following messages will be displayed on the second line.</p> <div data-bbox="769 1524 1170 1654" data-label="Text"> <p>CARD COPY/FORMAT XXXXXXXX ERROR</p> </div> <div data-bbox="532 1671 1300 1820" data-label="Text"> <p>R/W Error Indicates a Read/Write error occurred. No Card Error Indicates no card was recognized. Mem Full Error Indicates that there is insufficient memory available.</p> </div> |

LCD Panel Printer — Card Mode

Card ->MemoryCopy
All Y/N

CARD ->MEMORYCOPY
ALL Y/N

This selection allows you to copy the entire contents from PCMCIA Memory card installed in the Memory Card slot on the rear of the printer to the optional internal Expanded Memory.

| STEP | PROCEDURE |
|------|--|
| 1. | <p>Use the LINE key to step the underlined cursor to the desired setting. IF Yes is selected, the printer will enter the Card Copy mode.</p> <p>If No is selected, the display will advance to Card->MemoryCopy All mode.</p> |
| 2. | <p>Confirm your selection by stepping the underline cursor to the Yes selection. If you select No, the display will return to the previous selection.</p> <div data-bbox="751 905 1166 1039" data-label="Text"> <p>COPY START YES NO</p> </div> |
| 3. | <p>Press the FEED key to accept the selection. If Yes was selected, the copy process will start.</p> <div data-bbox="751 1115 1166 1249" data-label="Text"> <p>CARD -> MEMORY COPYING</p> </div> |
| 4. | <p>Once the copy process is completed, press the FEED key to advance the display.</p> <div data-bbox="751 1341 1166 1476" data-label="Text"> <p>CARD ->MEMORY COMPLETED</p> </div> |
| 5. | <p>If an error is encountered in the copy process, one of the following messages will be displayed on the second line.</p> <div data-bbox="751 1606 1166 1740" data-label="Text"> <p>CARD COPY/FORMAT XXXXXXX ERROR</p> </div> <p>R/W Error Indicates a Read/Write error occurred. No Card Error Indicates no card was recognized. Mem Full Error Indicates that there is insufficient memory available.</p> |

LCD Panel Printer — Card Mode

Memory->Card Copy
All <XMB> Y/N

```
MEMORY ->CARD COPY
ALL      <XMB> Y/N
```

This selection allows you to copy the entire contents of the optional Expanded Memory to the PCMCIA Memory card installed in the Memory Card slot on the rear of the printer.

| STEP | PROCEDURE |
|------|---|
| 1. | <p>Use the LINE key to step the underlined cursor to the desired setting. IF Yes is selected, the printer will enter the Card Copy mode.</p> <p>If No is selected, the display will advance to Card->MemoryCopy All mode.</p> |
| 2. | <p>Confirm your selection by stepping the underline cursor to the Yes selection. If you select No, the display will return to the previous selection.</p> <pre>COPY START YES NO</pre> |
| 3. | <p>Press the FEED key to accept the selection. If Yes was selected, the copy process will start.</p> <pre>MEMORY-> CARD COPY COPYING</pre> |
| 4. | <p>Once the copy process is completed, press the FEED key to advance the display.</p> <pre>MEMORY-> CARD COPY COMPLETED</pre> |
| 5. | <p>If an error is encountered in the copy process, one of the following messages will be displayed on the second line.</p> <pre>CARD COPY/FORMAT XXXXXXX ERROR</pre> <p>R/W Error Indicates a Read/Write error occurred. No Card Error Indicates no card was recognized. Mem Full Error Indicates that there is insufficient memory available.</p> |

LCD Panel Printer— Card Mode

Card->Memory Copy Program Y/N

```
CARD ->MEMORYCOPY
PROGRAM      Y/N
```

This selection allows you to copy printer firmware from the PCMCIA Memory card to the printer.

| STEP | PROCEDURE |
|------|--|
| 1. | <p>Use the LINE key to step the underlined cursor to the desired setting. IF Yes is selected, the printer will enter the Card Copy mode.</p> <p>If No is selected, the display will advance to the mode display.</p> |
| 2. | <p>Confirm your selection by stepping the underline cursor to the Yes selection. If you select No, the display will return to the previous selection.</p> <pre>COPY START YES NO</pre> |
| 3. | <p>Press the FEED key to accept the selection. If Yes was selected, the copy process will start.</p> <pre>CARD-> MEMORY COPY COPYING</pre> |
| 4. | <p>Once the copy process is completed, press the FEED key to advance the display.</p> <pre>CARD-> MEMORY COPY COMPLETED</pre> |
| 5. | <p>If an error is encountered in the copy process, one of the following messages will be displayed on the second line.</p> <pre>CARD COPY/FORMAT XXXXXXXX ERROR</pre> <p>R/W Error Indicates a Read/Write error occurred. No Card Error Indicates no card was recognized. Mem Full Error Indicates that there is insufficient memory available.</p> |

LCD Panel Printer — Card Mode

Memory->Card Copy
Program Y/N

```
MEMORY->CARDCOPY
PROGRAM      Y/N
```

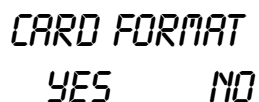
This selection allows the user to copy the current firmware installed in the printer to a PCMCIA Memory Card.

| STEP | PROCEDURE |
|------|--|
| 1. | Use the LINE key to step the underlined cursor to the desired setting. IF Yes is selected, the printer will enter the Card Copy mode. If No is selected, the display will advance to the mode display. |
| 2. | Confirm your selection by stepping the underline cursor to the Yes selection. If you select No, the display will return to the previous selection. |
| | <pre>COPY START YES NO</pre> |
| 3. | Press the FEED key to accept the selection. If Yes was selected, the copy process will start. |
| | <pre>MEMORY-> CARD COPY COPYING</pre> |
| 4. | Once the copy process is completed, press the FEED key to advance the display. |
| | <pre>MEMORY-> CARD COPY COMPLETED</pre> |
| 5. | If an error is encountered in the copy process, one of the following messages will be displayed on the second line. |
| | <pre>CARD COPY/FORMAT XXXXXXXX ERROR</pre> |
| | <p>R/W Error Indicates a Read/Write error occurred.</p> <p>No Card Error Indicates no card was recognized.</p> <p>Mem Full Error Indicates that there is insufficient memory available.</p> |

LCD Panel Printer— Card Mode

Card Format

Yes No



CARD FORMAT
YES NO

Before a PCMCIA card can be used, it must be formatted.

Note: Formatting a card destroys all data currently stored on the Card.

| STEP | PROCEDURE |
|------|---|
| 1. | Use the LINE key to step the underlined cursor to the desired setting. IF Yes is selected, the printer will enter the Card Format mode. If No is selected, the display will advance to the mode display. |

Memory Format

Yes No



MEMORY FORMAT
YES NO

Before the internal Expanded Memory can be used, it must be formatted.

Note: Formatting the memory will destroy any stored data.

| STEP | PROCEDURE |
|------|---|
| 1. | Use the LINE key to step the underlined cursor to the desired setting. IF Yes is selected, the printer will enter the Memory Format mode. If No is selected, the display will advance to the mode display. |

To exit the Card Mode, power off the printer, then back on.



CARD MODE

LCD Panel Printer— Service Mode

The Service Mode allows the operator to set up the basic operation parameters of the printer and is entered from the Advanced Mode.

To Enter Advanced Mode:

| STEP | PROCEDURE |
|------|--|
| 1. | <p>Press the LINE key while simultaneously turning the power on. When the printer emits one long beep, release the LINE key to display the first screen.</p> <div style="border: 1px solid black; padding: 5px; text-align: center; margin: 10px 0;"><i>ADVANCED MODE</i></div> |
| 2. | <p>Press the LINE key twice to enter the Service Mode.</p> <div style="border: 1px solid black; padding: 5px; text-align: center; margin: 10px 0;"><i>SERVICE MODE</i></div> <p>The Service Mode display indicates that the printer is in the Service Mode. To advance to the first selection, press the FEED key.</p> |

Gap [X.XV]
Input [X.XV}

GAP [X.XV]
INPUT [X.XV}

The M-8485Se printers determine the location of the leading edge of the label by measuring the difference between light levels when it sees either a label edge or a black "EYE" mark. This adjustment allows you to manually set the threshold voltage level between the maximum and minimum light levels. DIP switch DSW2-2 selects the sensor type. If DSW2-2 is in the OFF position, the setting will be for a See-Thru (or Gap) sensor and the LCD will display "GAP" on the top line along with the current setting. If DSW2-2 is in the ON position, the LCD will display "EYE" on the top line with its current setting. If the value entered for the bottom line setting is "0.0V", then the printer will automatically calculate the setting when the first label is fed after the printer is powered on or the head is closed. There are some instances where the automatically calculated value must be adjusted to ensure reliable label feeding, such as when the backing opacity or the reflectance of the "EYE" mark varies significantly within a roll of labels or between label rolls. In these instances the value should be set using the following procedures.

LCD Panel Printer — Service Mode

Gap [X.XV]
Input [X.XV]

| | |
|-------|--------|
| GAP | [X.XV] |
| INPUT | [X.XV] |

GAP - When setting the "GAP" threshold, the voltage shown on the top line of the display must be measured with nothing but the backing in the sensor and then again with a label still attached to the backing. The formula to be used for setting the threshold is:

$(\text{High Voltage Level} + \text{Low Voltage Level}) \times 0.5 = \text{Start Value}$

| STEP | PROCEDURE |
|------|--|
| 1. | Insert a label still attached to the backing into the sensor and close the Label Hold-Down. Record the voltage shown on the top line of the LCD panel. This line should have the message "GAP" on the top line (DIP switch DSW2-2 = OFF). Make sure the label is all the way under the sensor. |
| 2. | Strip the label from the backing and insert the backing strip under the sensor and close the Label Lid. Record the voltage shown on the top line of the LCD panel. The voltage ranges measured should be within the following range. <div style="text-align: center;"> Backing without label = 0.3 - 0.5V Backing with label = 1.0V >/- the low value </div> <p>If the measured values are outside this range, you may have trouble finding a value that will work properly under all conditions. If this is the case, a higher quality label may be needed to get adequate performance or see Section 4.3.</p> |
| 3. | Calculate the starting point voltage using the formula. |
| 4. | Use the LINE key to step the counter to the desired setting. The display will increment one step for each time the LINE key is pressed. If the LINE key is held down for more than two seconds, it will automatically go into the fast scroll mode. The reading will advance to a setting of 3.3 (the maximum voltage) after which it will automatically wrap and start at "0.0" again. If a value of "0.0" is set, the printer will automatically set the level each time the printer is powered on with labels loaded or the head is closed. |
| 5. | Once the setting is correct, pressing the FEED key will accept the setting and advance to the Online Feed display. |

LCD Panel Printer — Service Mode

Eye [X.XV]
Input [X.XV]

| | |
|-------|--------|
| EYE | [X.XV] |
| INPUT | [X.XV] |

EYE - When setting the "EYE" threshold, the voltage must be measured with nothing but the label under the sensor and then again with the printed "eye" mark under the sensor. The formula to be used for this is:

$$(\text{High Voltage Level} + \text{Low Voltage Level}) \times 0.5 = \text{Start Value}$$

| STEP | PROCEDURE |
|------|---|
| 1. | Insert a label into the sensor and close the Label Hold-Down. Make sure the printed "eye" mark is not under the sensor. Record the voltage shown on the top line of the LCD panel. This line should have the message "EYE" on the top line (DIP switch DSW2-2 = ON). |
| 2. | Now pull the label forward until the "eye" mark is positioned under the sensor (the voltage reading shown on the top line of LCD panel). The voltage ranges measured should be within the following ranges: <div style="text-align: center;"> Label Only = 0.3 - 0.5V Eye-mark = Equal to or greater than 1.2V above the low value. </div> <p>If the measured values are outside this range, you may have trouble finding a value that will work properly under all conditions. If this is the case, a higher quality label may be needed to get adequate performance or see Section 4.4.</p> |
| 3. | Calculate the starting point voltage using the formula. |
| 4. | Use the LINE key to step the counter to the desired setting. The display will increment one step for each time the LINE key is pressed. If the LINE key is held down for more than two seconds, it will automatically go into the fast scroll mode. The reading will advance to a setting of 3.3 (the maximum voltage) after which it will automatically wrap and start at "0.0" again. If a value of "0.0" is set, the printer will automatically set the level each time the printer is powered on with labels loaded or the head is closed. |
| 5. | Once the setting is correct, pressing the FEED key will accept the setting and advance to the Auto Online Feed display. |

LCD Panel Printer— Service Mode

Auto Online Feed Yes No

AUTO ONLINE FEED
YES NO

This selection specifies whether or not the printer will automatically feed a blank label when it is placed in the Online mode.

| STEP | PROCEDURE |
|------|---|
| 1. | Use the LINE key to step the underlined cursor to the desired setting. IF Yes is selected, the printer will feed a blank label anytime it enters the Online mode. If No is selected, the display will advance to the mode display. |

Feed on Error Yes No

FEED ON ERROR
YES NO

This selection specifies whether or not the printer will feed a blank label automatically when an error condition is cleared.

| STEP | PROCEDURE |
|------|---|
| 1. | Use the LINE key to step the underlined cursor to the desired setting. IF Yes is selected, the printer will feed a blank label anytime an error condition is cleared. If No is selected, the display will advance to the mode display. |

Reprint W/Feed Yes No

REPRINT W/FEED
YES NO

This selection specifies whether or not the printer will print the last printed label stored in memory when the **FEED** key is pressed in the Normal Online mode.

| STEP | PROCEDURE |
|------|---|
| 1. | Use the LINE key to step the underlined cursor to the desired setting. IF Yes is selected, the printer will reprint the last label when the FEED key is pressed when the printer is Online. If the printer is Offline, pressing the FEED key will feed a blank label. If No is selected, the display will advance to the mode display. |

LCD Panel Printer — Service Mode

Forward/Backfeed Distance Default

```
FORWARD/BACKFEED
DISTANCE  DEFAULT
```

This display will only appear when Backfeed is enabled (DSW3-4 = OFF). The maximum backfeed distance is 255mm.

| STEP | PROCEDURE |
|------|---|
| 1. | Use the LINE key to select either the Default or the Distance selection. If Default is selected, the display steps to the Web acceleration selection. |
| 2. | If Manual setting is selected, use the LINE key to advance the distance to the desired setting. Each time the LINE key is pressed, the distance will advance 1mm. The maximum distance is 255mm. <pre>FORWARD/BACKFEED DISTANCE XXXmm</pre> |
| 3. | Once the desired distance is set, press the FEED key to accept the setting and advance to the next display. |

Web Acceleration Fast Normal

```
WEB ACCELERATION
FAST  NORMAL
```

This selection allows the printer to use either a Normal or Fast web acceleration. Large, heavy, label rolls should use the Normal selection while smaller, lighter rolls can use the Fast selection.

| STEP | PROCEDURE |
|------|--|
| 1. | Use the LINE key to step the underline cursor to the desired setting. |
| 2. | Once the desired setting is selected, press the FEED key to accept the setting and step to the next display. NOTE: The Web Acceleration is automatically set to FAST if print speeds of 10 or 12 ips are selected. |

LCD Panel Printer— Service Mode

Euro Code
D5

EURO CODE
D5

This selection allows the user to specify the hexadecimal code for the character which is replaced with the Euro Character. The default is D5_H.

| STEP | PROCEDURE |
|------|---|
| 1. | The underline cursor should be positioned underneath the first digit selection. Use the LINE key to step to the desired setting. |
| 2. | Press the FEED key to advance the underline cursor to the second digit of the desired hexadecimal code. |
| 3. | Press the Line key to step to the desired setting. |
| 4. | When the setting is correct, press the FEED key to accept the setting and advance to the next display. |

Select Language
English

SELECT LANGUAGE
ENGLISH

This selection allows the user to select the character set used by the printer. The selections are English, French, German, Spanish, Italian and Portuguese.

| STEP | PROCEDURE |
|------|---|
| 1. | Press the LINE key to advance to the desired language setting. |
| 2. | When the setting is correct, press the FEED key to accept the setting and advance to the next display. |

LCD Panel Printer— Service Mode

Priority Setting LCD Command

PRIORITY SETTING
LCD COMMAND

This selection allows the user to assign a priority for Print Darkness, Print Speed and Print Offset.

| STEP | PROCEDURE |
|------|--|
| 1. | Use the LINE key to step to the desired priority. If LCD is selected, the setting established via the LCD display/menu system will be used for an incoming label job, regardless of any different command settings. If Command is selected, any commands in the label job will take precedence and be used for printing the job and the LCD Display will reflect the new setting. |
| 2. | Once the desired setting is selected, press the FEED key to accept the setting and advance to the next display. |

Service Mode



SERVICE MODE

To exit the Service Mode power the printer off, then back on.

LCD Panel Printer — Counters Mode

The Counters Mode is provided to allow the user to access the internal printer counters and is entered from the Advanced Mode.

To Enter Advanced Mode:

| STEP | PROCEDURE |
|------|---|
| 1. | Press the LINE key while simultaneously turning the power on. When the printer emits one long beep, release the LINE key to display the first screen.  |
| 2. | Press the LINE key 3X to advance to the Counters Mode.  |
| 3. | Press the FEED key to advance the display to the counters selections. |

Counters
HD DSP CUT LIFE




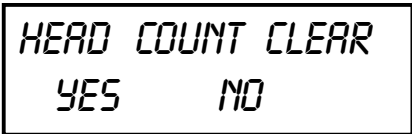
The counters are identified in the display as:

HD: Head Counter (should be reset when print head is replaced)

DSP: Dispense Counter

CUT: Cutter Counter

LIFE: Life Counter (cannot be reset)

| STEP | PROCEDURE |
|------|---|
| 1. | Use the LINE key to step the underlined cursor to the desired counter, the Head (HD) counter or the LIFE counter. The default position is the Head Counter. |
| 2. | Press the FEED key to display the current value (in meters) stored in the counter.  |
| 3. | Press the FEED key to advance to the next screen.  |

LCD Panel Printer — Counters Mode

(Continued)

| STEP | PROCEDURE |
|------|--|
| 4. | <p>Use the FEED key to select the desired setting. If you only want to read the counter value, select NO. If you want to read the counter and reset it to 0.0, place the underline cursor under YES. Once the desired setting is selected, press the FEED key to return to the Counter Mode display.</p> <div style="border: 1px solid black; padding: 10px; text-align: center; margin: 10px auto; width: fit-content;"> <p><i>COUNTERS MODE</i></p> </div> <p>To exit the Counters Mode power the printer off, then back on.</p> |

Test Print Mode

The Test Print Mode offers four different printer status labels for troubleshooting. If DSW3-5 is OFF, the Test Print cycle must be initiated with a Print Start command.

Test Print Mode Configuration

TEST PRINT MODE

CONFIGURATION

This option allows you to print a test label. It is recommended that you print a test label after you have changed any of the settings in the Advanced Mode. The test label allows you to verify that you indeed did make the desired changes.

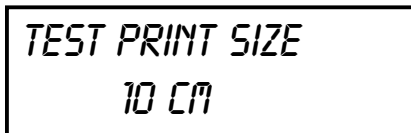
To enter the User Test Print Mode:

| STEP | PROCEDURE |
|------|--|
| 1. | <p>Power on the printer while pressing the FEED key. Release the FEED key and the printer will display the Test Print Mode message on the LCD panel.</p> |

LCD Panel Printer— Test Print Mode

| STEP | PROCEDURE |
|------|---|
| 2. | <p>Use the LINE key to step the underline cursor to the type of test label you wish to print. The choices are:</p> <div style="display: flex; justify-content: space-between;"> <div> <p>Configuration</p> <p>Bar Code</p> <p>Head Pattern</p> <p>Memory</p> <p>Factory</p> </div> <div> <p>See last pages in this section for test label sample print-outs</p> </div> </div> |
| 3. | <p>Once you have selected the type of test label to be printed, use the FEED key to accept the selection and advance to the Test Print Size display. This display allows you to select the label width.</p> |

Test Print Size
10 CM



NOTE: This display does not appear when a Memory Test Print is chosen. Only a small Memory Test Print can be printed.

Once you have selected the type of test label to be printed, use the **FEED** key to accept the selection and the display advances to the Test Print Size display. This display allows you to select the label width.

| STEP | PROCEDURE |
|------|---|
| 1. | Use the LINE key to select the label width. Each time the LINE key is pressed, the label size advances 1 cm until it reaches a maximum width of 10 cm at which point it will wrap to the smallest size of 4 cm. |
| 2. | Press the LINE key to accept the selection. |
| 3. | Press the FEED key to start printing test labels continuously. |
| 4. | Press the FEED key to stop the printer. |


A rectangular LCD display showing the text "PRESS FEED KEY TO" on the top line and "STOP PRINTING" on the bottom line.

To exit the Test Print Mode, power the printer off, then back on.

LCD Panel Printer— Default Setting Mode

Occasionally it is desirable to reset all printer configuration settings to their original default conditions. This allows the operator to start the reconfiguration of the printer starting from a known set of conditions.

Default Setting Mode



DEFAULT SETTING
YES NO

To enter the Default Setting Mode press the **FEED** and **LINE** keys while simultaneously power on the printer. When the printer emits one long beep release the **FEED** and **LINE** keys.

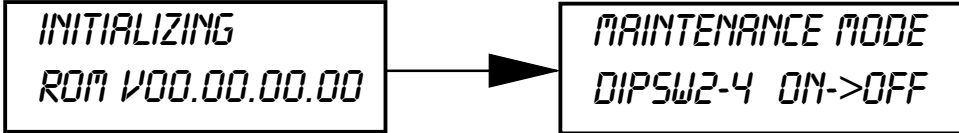



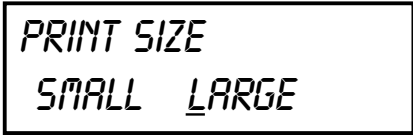

| STEP | PROCEDURE |
|------|--|
| 1. | Use the LINE key to select either YES or NO. |
| 2. | Once the desired setting is selected, press the FEED key to accept the selection and the printer will reset to the original default conditions. |
| 3. | When the printer has completed the reset process, the Default Setting Completed display will appear. The printer is now in the default configuration. |



DEFAULT SETTING
COMPLETED

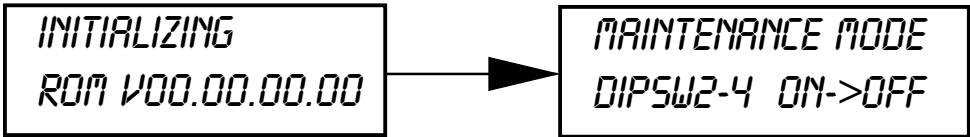
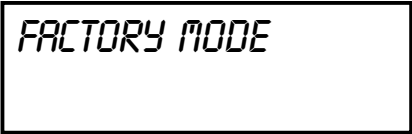

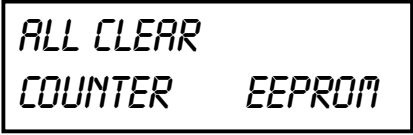
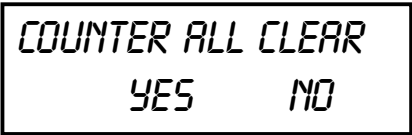
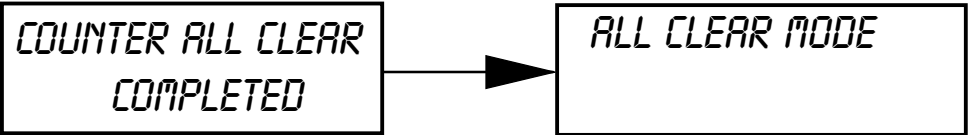
To exit the Default Setting Mode, power the printer off, then back on.

LCD Panel Printer— Maintenance Mode

| STEP | PROCEDURE |
|------|--|
| 1. | Record all current dip switch positions, then place all switches in the OFF position. |
| 2. | Place the DSW2-4 in the ON or up position. |
| 3. | Press the LINE and FEED key while simultaneously turning ON the power switch. When the printer beeps, release the keys. The following screens will appear. |
| |  |
| 4. | Place the DSW-4 in the OFF position and the following screen will appear. |
| |  |
| 5. | Press the FEED key to display the next screen. |
| |  |
| 6. | Press the LINE key once to change the message from NONE to ALL . |
| |  |
| 7. | Press the FEED key to clear the EEPROM. After a pause, the next screen will appear. |
| |  |
| 8. | Select the print label size by pressing the LINE key. The default is LARGE. |
| 9. | Press the FEED key for a test print. Press the FEED key again to stop printing. |
| |  |

LCD Panel Printer— Maintenance Mode

All Clear Mode

| STEP | PROCEDURE |
|------|---|
| 1. | Record all current dip switch positions, then place all switches in the OFF position. |
| 2. | Place the DSW2-4 in the ON or up position. |
| 3. | Press the LINE and FEED key while simultaneously turning ON the power switch. When the printer beeps, release the keys. The following screens will appear. |
| |  <pre> graph LR A["INITIALIZING ROM V00.00.00.00"] --> B["MAINTENANCE MODE DIPSW2-4 ON->OFF"] B --> C["FACTORY MODE"] </pre> |
| 4. | Place the DSW-4 in the OFF position and the following screen will appear. |
| |  |
| 5. | Press the LINE key to display the next screen. |
| |  |
| 6. | Press the FEED key to display the next screen. |
| |  |
| 7. | Press the FEED key to display the next screen. |
| |  |
| 8. | Press the LINE key to select YES or NO . If YES is selected press the FEED key to clear the EEPROM. |
| |  <pre> graph LR D["COUNTER ALL CLEAR COMPLETED"] --> E["ALL CLEAR MODE"] </pre> |

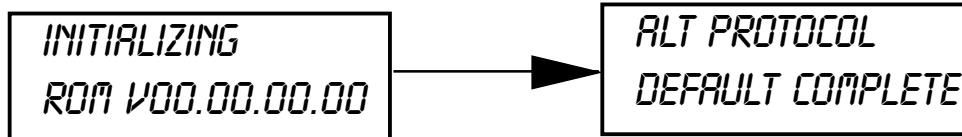
LCD Panel Printer— Clear Non-Standard Protocol

The standard protocol codes used by the printer can be modified to accommodate the requirements of different host systems. However, if the printer is to be used with a system that does not use the custom protocol codes, they can be cleared and the default protocol codes reactivated.

The default values are:

STX = 7B_H, ETX = 7D_H, ESC = 5E_H, ENQ = 40_H, NULL = 7E_H,
CAN = 21_H and OFFLINE = 5D_H.

**Alt. Protocol
Default Complete**



To Clear Non-Standard protocol codes, place DSW2-7 in the ON position and power on the printer while simultaneously pressing the **LINE** and **FEED** keys.

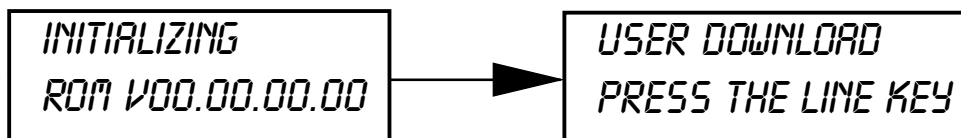
| STEP | PROCEDURE |
|------|---|
| 1. | When the printer emits one long beep release the LINE and FEED keys. |
| 2. | When the keys are released, the printer will replace the Alternate protocol codes with the default values. |
| 3. | After the default setting is complete, the printer will emit two short beeps indicating that the process is complete. |

To exit the mode, power the printer off, then back on.

Download User Defined Protocol Codes

The user can define a set of custom protocol codes and download them to the printer using the <ESC>LD command.

**User Download
Press the Line Key**



To enter the User Download mode, place **DSW2-7** in the **ON** position and power on the printer while simultaneously pressing the **LINE** key. When the printer emits one long beep release the LINE key.

| STEP | PROCEDURE |
|------|---|
| 1. | Set DSW2-7 to the OFF position to replace the Standard protocol codes or ON to replace the Alternate set of protocol codes. |
| 2. | Press the LINE key. The printer is now waiting for the data to be sent. |

**USER DOWNLOAD
WAITING**

LCD Panel Printer — Download User Defined Protocol Codes

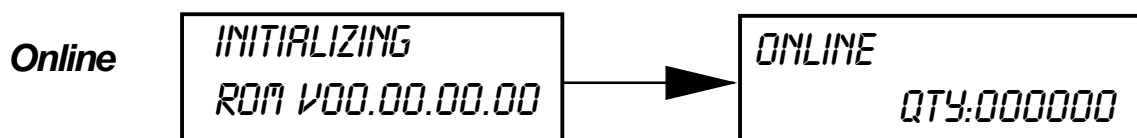
User Download

Press the Line Key
(Continued)

| STEP | PROCEDURE |
|------|---|
| 3. | Transmit the download data command stream to the printer. |
| 4. | After the data has been received, the printer will beep and print a status label. If it does not beep and print a status label, the printer did not accept the data. |
| 5. | If the printer did not beep and print a status label, turn the printer off and check you data stream for errors and start the download process over. |
| 6. | If the custom codes are correct, press the FEED key to accept them and terminate the download process. If they are incorrect, turn the printer off without pressing the FEED key and begin the process again. |

Hex Dump Mode

In addition to the User Test Print Labels, the printer can print the contents of the receive buffer in a hexadecimal format to allow the data stream to be examined for errors and troubleshooting.



To enter the Hex Dump mode, place **DSW2-4** in the **ON** position and power on the printer.

| STEP | PROCEDURE |
|------|--|
| 1. | The printer is now ready to receive data. |
| 2. | Send the data stream to the printer. |
| 3. | The receive data will be printed in a hexadecimal format. |
| 4. | To return the printer to normal position, place DSW2-4 in the OFF position and power the printer OFF and then back ON. |



LCD Panel Printer—Download Mode

| STEP | PROCEDURE |
|------|--|
| 1. | Record all current dip switch positions, then place all switches in the OFF position. |
| 2. | Place the DSW2-6 in the ON or up position. |
| 3. | Turn ON the power switch. The following screens will appear. |

INITIALIZING
ROM V00.00.00.00

→

FLASH DOWNLOAD
READY

During download process, these displays may be seen

XXXXXXXX DOWNLOAD
DOWNLOADING

XXXXXXXX DOWNLOAD
COMPLETED

DOWNLOAD ERROR
XXXXXXXX ERROR

Press the **FEED** key to return to the FLASH DOWNLOAD screen.

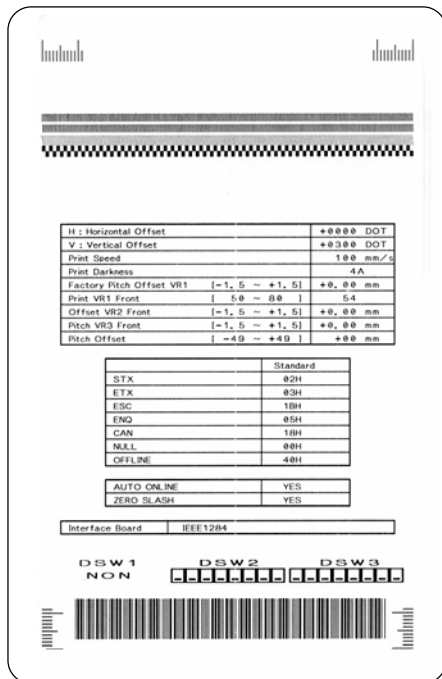
LCD Panel Printer—User Download Mode

| STEP | PROCEDURE |
|------|--|
| 1. | Record all current dip switch positions, then place all switches in the OFF position. |
| 2. | Place the DSW2-7 in the ON or up position. |
| 3. | Press the LINE key while simultaneously turning ON the power switch. When the printer beeps, release the keys. The following screens will appear. <div data-bbox="446 535 1421 892"><pre>graph LR; A["INITIALIZING ROM V00.00.00.00"] --> B["USER DOWNLOAD PRESS THE LINE KEY"]; B --- C["USER DOWNLOAD WAITING"]</pre></div> |

LCD Panel Printer—Label Out Sensor

| STEP | PROCEDURE |
|------|--|
| 1. | Record all current dip switch positions, then place all switches in the OFF position. |
| 2. | Place the DSW2-4 in the ON or up position. |
| 3. | Press the FEED key while simultaneously turning ON the power switch. When the printer beeps, release the keys. The following screens will appear. <div><div>INITIALIZING ROM V00.00.00.00</div><div>→</div><div>LABEL OUT SENSOR</div></div> |
| 4. | Place the DSW2-4 in the OFF position and the following screen will appear. <div>LABEL OUT SENSOR YES NO</div> |
| 5. | Press the LINE key to select YES or NO, then press the FEED key and the following screen will appear. <div>LABEL OUT SENSOR COMPLETED</div> |

2.5 Sample Test Labels



Sample Configuration Test Label showing various settings and a barcode.


| | |
|--------------------------|----------------------------|
| H : Horizontal Offset | +0000 DOT |
| V : Vertical Offset | +0000 DOT |
| Print Speed | 100 mm/s |
| Print Darkness | 4A |
| Factory Pitch Offset VR1 | [-1, 5 ~ +1, 5] +0,00 mm |
| Print VR1 Front | [50 ~ 80] 54 |
| Offset VR2 Front | [-1, 5 ~ +1, 5] +0,00 mm |
| Pitch VR3 Front | [-1, 5 ~ +1, 5] +0,00 mm |
| Pitch Offset | [-40 ~ +40] +00 mm |

| | |
|---------|-----|
| STX | 02H |
| ETX | 03H |
| ESC | 10H |
| END | 05H |
| CAN | 10H |
| NUL | 00H |
| OFFLINE | 40H |

| | |
|-------------|-----|
| AUTO ONLINE | YES |
| ZERO SLASH | YES |

Interface Board IEEE1284

DSW1 NON DSW2 DSW3



CONFIGURATION



Sample BAR CODE Test Label showing various barcode types and a QR code.

TEST PRINT : BARCODE

NW-1 CODE 39 INTERLEAVE 2/5

JAN/EAN 13 JAN/EAN 8 INDUSTRIAL 2/5

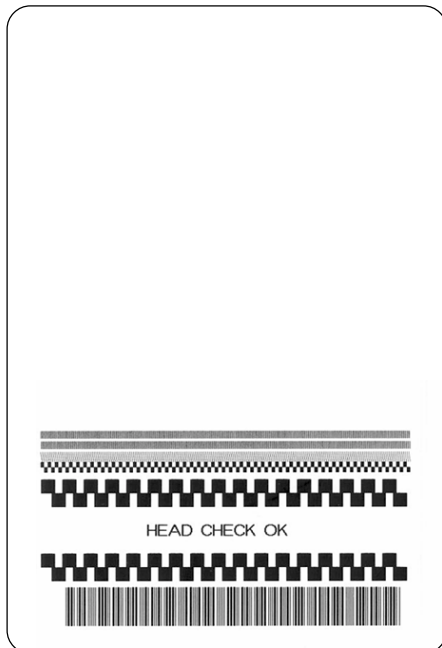
MATRIX 1/5 CODE 128 UCC 128

PDF417

VERI CODE


MAXI

BAR CODE

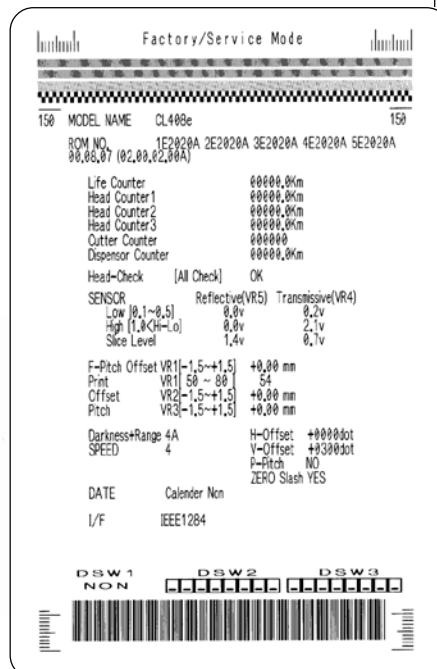


Sample HEAD CHECK Test Label showing a barcode and the text HEAD CHECK OK.

HEAD CHECK OK



HEAD CHECK



Sample FACTORY Test Label showing various factory settings and a barcode.

Factory/Service Mode

150 MODEL NAME CL400e 150

ROM NO. 1E2020A 2E2020A 3E2020A 4E2020A 5E2020A
00,00,07 (02,00,02,00A)

Life Counter 00000,0km

Head Counter1 00000,0km

Head Counter2 00000,0km

Head Counter3 00000,0km

Cutter Counter 000000

Dispenser Counter 00000,0km

Head-Check [All Check] OK

SENSOR Reflective(VR5) Transmissive(VR4)

Low [0.1~0.5] 0.0v 0.2v

High [1.0~1.0] 0.0v 2.1v

Slice Level 1.4v 0.1v

F-Pitch Offset VR1 [-1.5~+1.5] +0,00 mm

Print VR1 50 ~ 80 54

Offset VR2 [-1.5~+1.5] +0,00 mm

Pitch VR3 [-1.5~+1.5] +0,00 mm

Darkness*Range 4A H-Offset +0000dot

SPEED 4 V-Offset +0300dot


F-Pitch NO

ZERO Slash YES

DATE Calendar Non

I/F IEEE1284

DSW1 NON DSW2 DSW3



FACTORY

ALL EXPAND MEMORY

NOT INTERNAL EXPAND MEMORY 0 Kbyte

- 0 bytes for 0 formats
- 0 bytes for 0 graphic
- 0 bytes for 0 PCX files
- 0 bytes for 0 BMP files
- 0 bytes for 0 T.T fonts
- 0 bytes for 0 designed fonts
- 0 bytes for 0 Download Fonts
- 0 bytes for 0 form overlay
- 0 bytes for 0 Kanji Outline

CARD 0 Kbyte

- 0 bytes for 0 formats
- 0 bytes for 0 graphic
- 0 bytes for 0 PCX files
- 0 bytes for 0 BMP files
- 0 bytes for 0 T.T fonts
- 0 bytes for 0 designed fonts
- 0 bytes for 0 Download Fonts
- 0 bytes for 0 form overlay
- 0 bytes for 0 Kanji Outline
- 0 bytes for 0 Firmware Program

MEMORY

ILLUSTRATIONS SHOWN ARE EXAMPLES
ONLY AND MAY NOT EXACTLY MATCH
YOUR OUTPUT

Section 3

Interface Specifications

3.1 Overview

This section presents the interface specifications for the M-8485Se printer. These specifications include detailed information on how to properly interface your printer with your host system.

M-8485Se printers utilize a Plug-In Interface Module for maximum printer configuration flexibility.

The following information is presented in this section.

- Interface Types
- The Receive Buffer
- IEEE1284 Parallel Interface (Standard with unit)
- Optional RS232C Serial Interface
 - General Specifications
 - Electrical Specifications
 - Pin Assignments
 - Ready/Busy Flow Control
 - X-On/X-Off Flow Control
- Optional Universal Serial BUS (USB)
- Optional Local Area Network (LAN)
- BI-Directional Communications
- Ext Connector

3.2 Interface Types

The parallel interface for the M-8485Se Printer is a high speed, bi-directional parallel interface that conforms to the IEEE 1284 specification. (ECP mode on some computers). The interface is also compatible with the older Centronics parallel interface standard. If it does not detect the correct IEEE 1284 signals in the interface connection, it will automatically operate in the standard Centronics mode which is much slower. To use the IEEE 1284 parallel interface to its fullest capability requires that the host also have an IEEE 1284 compatible interface and that the two be connected with a cable that meets the IEEE 1284 specification. If either of these two are not present, the data rate is severely compromised.

Interface Types

In order to provide flexibility in communicating with a variety of host computer systems, M-8485Se printers use a Plug-In Interface Module. The IEEE1284 Interface module is shipped with the printer unless another interface type is specified at the time of the order. The other interfaces available are a high speed (to 57.6K bps) serial interface, an Ethernet interface or an optional Universal Serial Bus (USB) interface.

The Parallel interface will probably be the most useful in communicating with IBM PCs and compatibles. The RS232C Serial interface allows connectivity to a number of other hosts. The USB interface allows the printer to be connected to a computer that supports peripherals attached to a USB bus. Up to 127 peripherals can be connected to a single USB port.

WARNING: Never connect or disconnect interface cables (or use a switch box) with power applied to either the host or the printer. This may cause damage to the interface circuitry in the printer/host and is not covered warranty.



**CENTRONICS
PARALLEL INTERFACE**



**RS232C SERIAL
INTERFACE**



USB INTERFACE



LAN INTERFACE

Available Interfaces

3.3 The Receive Buffer

The M-8485Se printer has the ability to receive a data stream from the host in one of two ways. The receive buffer may be configured to accept one print job at a time or multiple print jobs. The single job print buffer is generally used by software programs that wish to maintain control of the job print queue so that it can move a high priority job in front of ones of lesser importance. The multiple job buffer on the other hand prints all jobs in the order they are received by the printer and the order of printing cannot be changed.

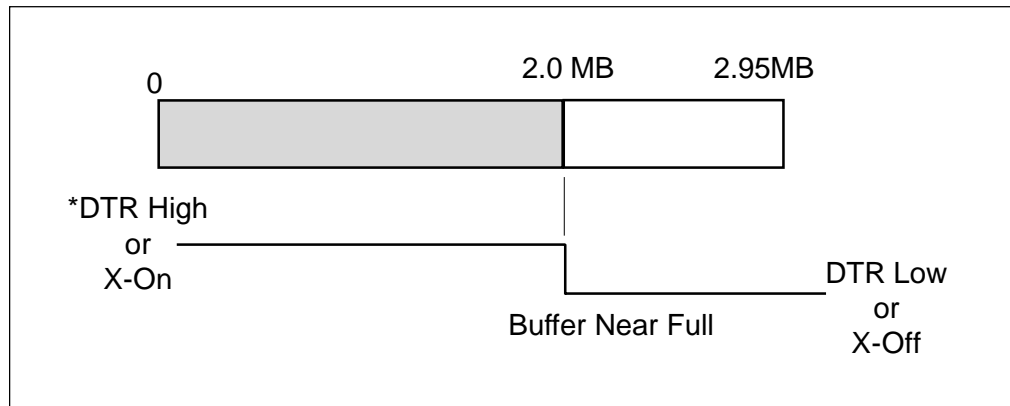
Single Job Buffer

The printer receives and prints one job at a time. Each job must not exceed 2.95MB.

Multi Job Buffer

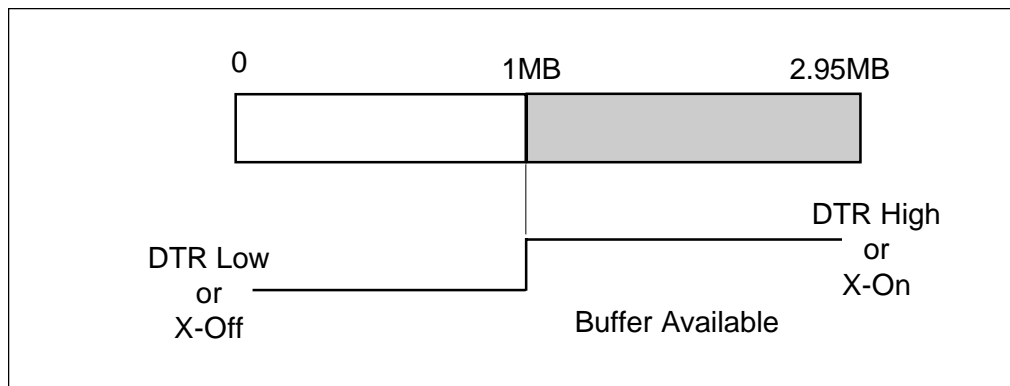
The printer is able to continuously receive print jobs, compiling and printing other jobs at the same time. It acts much like a "print buffer" to maximize the performance of the host and the printer.

When using the RS232 Serial interface, the Multi Job Buffer uses either the **Ready/Busy** with **DTR** (pin 20) or **X-On/X-Off** flow control protocols. See these sections for more details. With an empty receiving buffer, the status of **DTR** is "high" (or an **X-On** status if using **X-On/X-Off**), meaning the printer is ready to receive data. When the receive buffer is holding 2.0MB of data (1MB from being full), **DTR** will go "low" (or an **X-Off** is sent) indicating the printer can no longer receive data. This condition is called "Buffer Near Full"



The receiving buffer will not be able to receive more data again until a "Buffer Available" condition occurs. This takes place when the receiving buffer has emptied so that only 1MB bytes of data are being held (2.0MB bytes from being full). At this time, DTR will go "high" or an X-On is sent to tell the host that it can again receive data.

The Receive Buffer



All printer error conditions (i.e., label out, ribbon out) will cause the printer to go busy (**DTR "low"** or **X-Off**) until the problem is corrected and the printer is placed online. The printer will also be busy if taken offline from the front panel.

3.4 IEEE 1284 Parallel Interface

The parallel interface for the M-8485Se printer is a Plug-In Interface Module that can be installed by the user. It conforms to the IEEE 1284 specification. It will automatically detect the IEEE 1284 signals and operate in the high speed mode. If it does not detect the IEEE 1284 signals, it will operate in the standard Centronics mode, which is significantly slower. *For this reason, an interface cable and host interface conforming to the IEEE 1284 specification must be present to fully utilize the speed capabilities.* This interface also operates bi-directionally and can report the status of the printer back to the host.

Electrical Specifications:

| | |
|---------------------------|--|
| Printer Connection | AMP 57-40360 (DDK) or equivalent |
| Cable Connection | AMP 57-30360 (DDK) or equivalent |
| Cable | IEEE1284 Parallel, 10 ft. (3 m) or less |
| Signal Level | High = +2.4V to +5.0V Low = 0V to -0.4V |

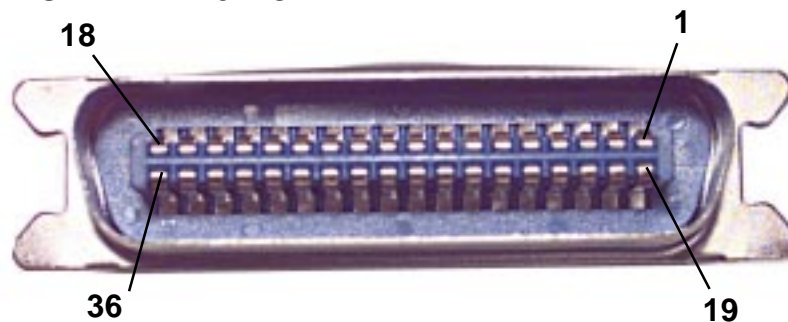
Data Streams:

<ESC>A .. Job#1 .. <ESC>Z<ESC>A .. Job#n .. <ESC>Z

IEEE 1284 Parallel Interface

| PIN | SIGNAL | DIRECTION | PIN | SIGNAL | DIRECTION |
|-----|----------------------------------|--------------|-----|-------------------------------------|-----------|
| 1 | $\overline{\text{STROBE}}$ | To Printer | 19 | STROBE Return | Reference |
| 2 | DATA 1 | To Printer | 20 | DATA 1 Return | Reference |
| 3 | DATA 2 | To Printer | 21 | DATA 2 Return | Reference |
| 4 | DATA 3 | To Printer | 22 | DATA 3 Return | Reference |
| 5 | DATA 4 | To Printer | 23 | DATA 4 Return | Reference |
| 6 | DATA 5 | To Printer | 24 | DATA 5 Return | Reference |
| 7 | DATA 6 | To Printer | 25 | DATA 6 Return | Reference |
| 8 | DATA 7 | To Printer | 26 | DATA 7 Return | Reference |
| 9 | DATA 8 | To Printer | 27 | DATA 8 Return | Reference |
| 10 | $\overline{\text{ACK}}$ | To Host | 28 | ACK Return | Reference |
| 11 | Busy | To Host | 29 | BUSY Return | Reference |
| 12 | PTR ERROR | To Host | 30 | PE Return | Reference |
| 13 | SELECT | To Host | 31 | $\overline{\text{INIT}}$ | From Host |
| 14 | $\overline{\text{AUTOFD}}^{(1)}$ | To Host | 32 | $\overline{\text{FAULT}}$ | To Host |
| 15 | Not Used | | 33 | Not Used | |
| 16 | Logic Gnd | | 34 | Not Used | |
| 17 | FG | Frame Ground | 35 | Not Used | |
| 18 | +5V(Z=24K ohm) | To Host | 36 | $\overline{\text{SELECTION}}^{(1)}$ | From Host |

(1) Signals required for IEEE 1284 mode.

PIN ASSIGNMENTS - IEEE 1284 CABLE END

3.5 RS232C Serial Interface

The High Speed Serial Interface is a Plug-In Interface Module that can be installed in the printer by the user.

General Specifications:

| | |
|---------------------------|--|
| Asynchronous ASCII | Half-duplex communication Ready/Busy Hardware Flow Control Pin 20, DTR Control Pin 4, RTS Error Condition X-On/X-Off Software Flow Control Bi-Directional Communication |
|---------------------------|--|

| | |
|-------------------------------|-------------------------------|
| Data Transmission Rate | 9600, 19200, 38400, 57600 bps |
|-------------------------------|-------------------------------|

| | |
|-------------------------|--|
| Character Format | 1 Start Bit (fixed) 7 or 8 data bits (selectable) Odd, Even or No Parity (selectable) 1 or 2 Stop bits (selectable) |
|-------------------------|--|

Electrical Specifications:

| | |
|------------------|-----------------|
| Connector | DB-25S (Female) |
|------------------|-----------------|

| | |
|--------------|---|
| Cable | DB-25P (Male), 50 ft. maximum length. For cable configuration, refer to Cable Requirements appropriate to the RS232C protocol chosen. |
|--------------|---|

| | |
|---------------------|---|
| Signal Level | High = +5V to +12V Low = -5V to -12V |
|---------------------|---|

PIN ASSIGNMENTS - RS232C PRINTER END



RS232C Serial Interface

Cable Requirements

| DB9 | DB25 | HOST | INTERCONNECTION | PRINTER |
|-----|------|------|-----------------|------------------------------|
| 1 | 1 | FG | ←→ | 1 FG (Frame Ground) |
| 2 | 3 | RD | ← | 2 TD (Transmit Data) |
| 3 | 2 | TD | → | 3 RD (Receive Data) |
| 8 | 5 | CTS | ← | 4 RTS (Request to send) |
| 7 | 4 | RTS | → | 5 CTS (Clear to Send) |
| 4 | 20 | DTR | → | 6 DSR (Data Set Ready) |
| 6 | 6 | DSR* | ← | 20 DTR (Data Terminal Ready) |
| 5 | 7 | SG | ←→ | 7 SG (Frame Ground) |

* This connection at the host side of the interface would depend upon the pin that is being used as the Ready/Busy signal by the driving software. Typically on a PC, it would be either CTS (pin 5) or DSR (pin 6) on a DB-25 connector.

RS232C Interface Signals

| PIN | DIRECTION | SIGNAL DESCRIPTION |
|-----|------------|--|
| 1 | Reference | FG (Frame Ground) |
| 2 | To Host | TD (Transmit Data) - Data from the printer to the host computer. Sends X-On/X-Off characters or status data (Bi-Directional protocol). |
| 3 | To Printer | RD (Receive Data) - Data to the printer from the host computer. |
| 4 | To Host | RTS (Request to Send) - Used with Ready/Busy flow control to indicate an error condition. RTS is high and remains high unless the print head is open (in this case, RTS would return to the high state after the print head is closed and the printer is placed back on-line) or an error condition occurs during printing (e.g. label out). |
| 5 | To Printer | CTS (Clear to Send) - When this line is high, the printer assumes that data is ready to be transmitted. The printer will not receive data when this line is low. If this line is not being used, it should be tied high (to pin 4). |
| 6 | To Printer | DSR (Data Set Ready) - When this line is high, the printer will be ready to receive data. If this line is not being used, it should be tied high (to pin 20). |
| 7 | Reference | SG (Signal Ground) |
| 20 | To Host | DTR (Data Terminal Ready) - This signal applies to Ready/Busy flow control. The printer is ready to receive data when this pin is high. It goes low when the printer is off-line either manually or due to an error condition, and while printing in the Single Job Buffer mode. It will also go low when the data in the buffer reaches the Buffer Near Full level. |

Ready/Busy Flow Control

Ready/Busy is the hardware flow control for the serial interface on the M-8485Se printer. By raising/lowering the voltage level on Pin 20 of the RS232 port, the printer notifies the host when it is ready to receive data. Pin 4 (**RTS**) and pin 20 (**DTR**) are the important signals on the printer for this method of flow control. The host must be capable of supporting this flow control method for it to function properly.

X-On/X-Off Flow Control

X-On/X-Off flow control must be used whenever hardware (Ready/Busy) flow control is not available or desirable. Instead of a voltage going high/low at pin 20, control characters representing "Printer Ready" (**X-On** = 11 hexadecimal) or "Printer Busy" (**X-Off** = 13 hexadecimal) are transmitted by the printer on pin 2 (Transmit Data) to the host. In order for this method of flow control to function correctly, the host must be capable of supporting it. **X-On/X-Off** operates in a manner similar to the function of pin 20 (**DTR**) as previously explained. When the printer is first powered on it sends an **X-Off** when the "Buffer Near Full" level is reached and a **X-On** when the data level of the buffer drops below the "Buffer Available" mark. When the printer is taken off-line manually it transmits an **X-Off** indicating it cannot accept data. When it is placed back on line manually, it sends an **X-On**, indicating it is again available for receipt of data. If an error occurs during printing (paper out, ribbon out), the printer sends an **X-Off** as soon as an error condition is detected. When the error is cleared and the printer is placed back on-line, it transmits as **X-On** indicating it is again ready to accept data.

Upon power up if no error conditions are present, the printer will continually send **X-On** characters at five millisecond intervals until it receives a transmission from the host.

Data Streams

The data streams for **X-On/X-Off** and **Ready/Busy** flow control are constructed in the same way as they are for Ready/Busy flow control.

<ESC>A .. Job#1 .. <ESC>Z<ESC>A .. Job#n .. <ESC>Z

Example: <ESC>A .. Job#1 .. <ESC>Z

NOTE: All characters are in ASCII.

3.6 Universal Serial Bus (USB) Interface

The Universal Serial Bus (USB) interface is a Plug-In Interface Module that can be installed by the user. It requires a driver (shipped with each printer that has the interface installed) that must be loaded on your PC and the PC must be configured to support USB peripherals using Windows 98. Details for loading the USB driver are contained in the USB Interface Manual that is shipped with each printer with a USB Optional interface installed. Up to 127 devices may be connected to a USB port.

General Specifications:

| | |
|-------------------|------------------------|
| Connector: | USB Type B Plug |
| Cable: | 10ft (3 m) max. |
| Host: | Windows 98 USB Port |

Electrical Specifications:

| | |
|----------------------------|-------------------------|
| Power Supply: | Bus Power through cable |
| Power Consumption:: | +5V@80ma |

3.7 Local Area Network (LAN) Optional Interface

A Local Area Network (LAN) interface is a Plug-In Interface Module that can be installed by the user. It requires a driver (shipped with each printer) that has the interface installed. The driver must be loaded on your PC and the PC must be configured to run one of the supported network protocols using a 10/100BaseT LAN connection. Details for loading the LAN driver are contained in the LAN Interface Manual that is shipped with each printer with a LAN Optional interface installed.

General Specifications:

Connector: 10/100BaseT Category 5

Connector: RJ-45 Receptical

Electrical Specifications:

Power Supply: Powered from printer

3.8 Bi-Directional Communications

This is a two-way communications protocol between the host computer and the printer, thus enabling the host to check printer status. When Bi-Com 4 communications is selected, there is no busy signal from the printer. The host must request the complete status from the printer, including ready/busy. The host may request status in two different ways.

ENQUIRE/ACK/NAK

In the Bi-Com 4 mode, the host transmits an **ENQ** (05 hexadecimal) to the printer and the printer will respond with its status within five milliseconds. If printing, it will respond upon finishing the current label, then resume printing. In order for this protocol to work properly with an RS232 Optional Interface, pin 6 (**DTR**) and pin 5 (**CTS**) must be held high by the host. One way to ensure these pins are always in the correct state is to tie pin 20 (**DTR**) to pin 6 (**DSR**) and pin 4 (**RTS**) to pin 5 (**CTS**) at the printer end of the cable.

Enquire (ENQ)

Upon receipt of an **ENQ** command, the printer responds with 25 bytes of status information bounded by an **STX/ETX** pair. The Bi-Com protocol works only in the Multi-Job Buffer mode. The status information is defined as follows:

<STX>{2 Byte ID}{1 Status Byte}{6 Byte Label Remaining}{16 Byte Job Name}<ETX>

ID - This is a two byte number identifying the current print job ID. The print job ID is defined using the **<ESC>ID** Job ID command transmitted with the print job (see Job ID Store in the command listing for more information on how to use this command). The range is from 00 to 99.

Status - A single byte defining the current status of the printer (see the Status Byte Definition table).

Label Remaining - Six bytes defining the number of labels remaining in the current print job. The range is from 000000 to 999999 labels.

Job Name - Sixteen bytes of ASCII characters identifying the name assigned to the job by the **<ESC>WK** Job Name command. If the Job Name is less than 16 characters, the field will be padded with leading zeroes.

If an **ENQ** is received after the print job specified in the ID bytes has been completed, or there is no data in the buffer, the printer will respond with two "space" characters (20 hexadecimal) for the ID number and six "zero" characters (30 hexadecimal) in the Remaining Labels bytes and 16 byte Job Name.

Cancel (CAN)

If a **CAN** (18 hexadecimal) command is received, it will stop the print job and clear all data from the receive and print buffers. A delay of five milliseconds or more is required before any new data can be downloaded. The **CAN** command is effective immediately upon receipt, even if the printer is off-line or in an error condition. The printer will return an **ACK** (06 hexadecimal) if there is no printer error condition and a **NAK** (16 hexadecimal) if an error condition exists.

Print Job

Upon receipt of a valid print job (**<ESC>A ...<ESC>Z**), an **ACK** (06 hexadecimal) will be returned by the printer if there are no errors and a **NAK** (16 hexadecimal) if a printer error exists.

Print Stop (DLE)

If a **DLE** (10 hexadecimal) is received by the printer, the print process is stopped and an **ACK** (06 hexadecimal) is returned if there are no errors and a **NAK** (16 hexadecimal) if a printer error exists.

Print Start (DC1)

If the printer has been stopped by receipt of a **DLE** (10 hexadecimal) command, it can be restarted by sending a **DC1** (hexadecimal 11) command. Upon receipt of this command an **ACK** (06 hexadecimal) is returned if there are no errors and a **NAK** (16 hexadecimal) if a printer error exists.

(1) To provide compatibility with older SATO printers, the RS232 interface can be configured to use an earlier Bi-Com 3 ENQ/ACK/NAK protocol selected via DSW2-8 and DSW1-7/8 (on the RS232 Interface module). The earlier protocol did not have provisions for the Job Name and did not respond to the DLE or DCI commands. Also, there are additional Response Codes in the Status Byte Definition. It is recommended that you use the current protocol rather than the earlier version unless it is necessary for compatibility with existing software.

Status Byte Definition, Bi-Com Protocol

| ASCII | HEX | DEFINITION |
|---|-----|--------------------------------------|
| OFF-LINE | | |
| 0 | 30 | No Errors |
| 1 | 31 | Ribbon Near End |
| 2 | 32 | Buffer Near Full |
| 3 | 33 | Ribbon Near End and Buffer Near Full |
| 4 ⁽¹⁾ | 34 | Print Stop (without error) |
| ON-LINE, WAITING FOR DATA | | |
| A | 41 | No Errors |
| B | 42 | Ribbon Near End |
| C | 43 | Buffer Near Full |
| D | 44 | Ribbon Near End and Buffer Near Full |
| E ⁽¹⁾ | 45 | Print Stop (without error) |
| ON-LINE, PRINTING | | |
| G | 47 | No Errors |
| H | 48 | Ribbon Near End |
| I | 49 | Buffer Near Full |
| J | 4A | Ribbon Near End and Buffer Near Full |
| K ⁽¹⁾ | 4B | Print Stop (without error) |
| ON-LINE, WAITING TO DISPENSE A LABEL | | |
| M | 4D | No Errors |
| N | 4E | Ribbon Near End |
| O | 4F | Buffer Near Full |
| P | 50 | Ribbon Near End and Buffer Near Full |
| Q ⁽¹⁾ | 51 | Print Stop (without error) |
| ON-LINE, COMPILING PRINT JOB | | |
| S | 53 | No Errors |
| T | 54 | Ribbon Near End |
| U | 55 | Buffer Near Full |
| V ⁽¹⁾ | 56 | Ribbon Near End and Buffer Near Full |
| W ⁽¹⁾ | 56 | Print Stop (without error) |
| OFF-LINE, ERROR CONDITION | | |
| b | 62 | Head Open |
| c | 63 | Paper End |
| d | 64 | Ribbon End |
| e | 65 | Media Error |
| f | 66 | Sensor Error |
| g | 67 | Head Error |
| j | 6A | Cutter Error |
| k | 6B | Other Error Condition |

(1) Not supported by
legacy Bi-Com protocols

Status Response

The second method of determining printer status is to integrate the printer with specific commands. The response from these commands will provide specific information about the printer status depending upon the command. This allows the controlling application to determine the status of a printer when it is located in a remote location.

Print Status (SOH + MG)

Upon receipt of an **SOH** (hexadecimal 01) followed immediately by an ASCII **MG** causes the printer to return a 30 byte Printer Status Word bounded by an **STX-ETX** pair that reports the current operating status of the printer.

| BYTE NUMBER | HEX VALUE | DESCRIPTION |
|-------------|-----------|-------------------------------|
| 1 | 00 | Thermal Transfer Print Type |
| | 01 | Direct Thermal Print Type |
| 2 | 00 | 203 dpi resolution |
| | 01 | 305 dpi resolution |
| 3 | 00 | 2 ips Print Speed |
| | 01 | 3 ips Print Speed |
| | 02 | 4 ips Print Speed |
| | 03 | 5 ips Print Speed |
| | 04 | 6 ips Print Speed |
| | 05 | 7 ips Print Speed |
| | 06 | 8 ips Print Speed |
| | 07 | 9 ips Print Speed |
| | 08 | 10 ips Print Speed |
| | 09 | 12 ips Print Speed |
| 4 | 00 | Not Supported |
| | 01 | Not Supported |
| | 02 | Not Supported |
| | 03 | Label Dispense Print Mode |
| | 04 | Reserved |
| 5 | 00 | Not Supported |
| | 01 | Not Supported |
| | 02 | Not Supported |
| 6 | 00 | Dispense at head position |
| | 01 | Dispense at dispense position |
| 7 | 00 | Reserved |
| 8 | 41 | Not Supported |
| | 42 | Not Supported |
| | 43 | Not Supported |
| 9 | 00 | Print Density Level 1 |
| | 01 | Print Density Level 2 |
| | 02 | Print Density Level 3 |
| | 03 | Print Density Level 4 |
| | 04 | Print Density Level 5 |

Status Response (Cont)

| BYTE NUMBER | HEX VALUE | DESCRIPTION |
|-------------|-------------------------|---|
| 10 | 00 | Reflective (Eye-Mark) Sensor |
| | 01 | Gap (See-Thru) Sensor |
| | 02 | No Sensor |
| 11 | 00 | Zero Slash Disabled |
| | 01 | Zero Slash Enabled |
| 12 | 00 | Reserved |
| 13 | 00 | Not Supported |
| | 01 | Not Supported |
| 14 | 00 | Online Feed Disabled |
| | 01 | Online Feed Enabled |
| 15 | 00 | Fixed Pitch |
| | 01 | Proportional Pitch |
| 16-17 | 00 to C80 00 to 12C0 | Not Supported |
| 18-19 | 00 to 340 00 to 4E0 | Not Supported |
| 20-21 | 00 to 3E7 | Vertical Base Reference Point Offset in dots (0 to 792) |
| | FFFF to FC19 | Vertical Base Reference Point Offset in dots (-1 to -792) |
| 22-23 | 00 to 320 | Horizontal Base Reference Point Offset in dots (0 to 800) |
| | 00 to FCE0 | Horizontal Base Reference Point Offset in dots (-1 to -800) |
| 24 | 00 to 63 FF to 9D | Not Supported |
| 25 | 00 to 63 FF to 9D | Not Supported |
| 26 | 00 to 63 FF to 9D | Not Supported |
| 27 | 00 to 63 | Dispense Offset in dots (0 to 99) |
| | FF to 9D | Dispense Offset in dots (-1 to -99) |
| 28 | 00 | Compatibility Mode Enabled |
| | 01 | Compatibility Mode Disabled |
| 29 | 08 to 40 | Not Supported |
| 30 | 00 | Buzzer Enabled |
| | 01 | Buzzer Disabled |

Status Response (Cont)**Counter Status (SOH + ME)**

Upon receipt of an **SOH** (hexadecimal 01) followed immediately by an ASCII **ME** (hexadecimal 4D45) causes the printer to return a 28 byte Head Counter Status Word bounded by an **STX-ETX** pair that reports the current status of the printer life counters.

| BYTE NUMBER | VALUE | DESCRIPTION |
|-------------|-------|-------------------------------------|
| 1-8 | Hex | Current Life Counter in dots |
| 9-12 | Hex | 1st (Current) Head Counter in dots |
| 13-16 | Hex | 2nd (Previous) Head Counter in dots |
| 17-20 | Hex | 3rd Head Counter in dots |
| 21-24 | Hex | Not Supported |
| 25-28 | Hex | Not Supported |

Sensor Status (SOH + SG)

Upon receipt of an **SOH** (hexadecimal 01) followed immediately by an ASCII **SG** (hexadecimal 5347) causes the printer to return a 4 byte Sensor Status Word bounded by an **STX-ETX** pair that reports the values of the printer life counters.

| BYTE NUMBER | VALUE | DESCRIPTION |
|-------------|------------------------------------|-------------------------------|
| 1 | Hex | Reflective Sensor Level |
| 2 | Hex | Transmissive Sensor Level |
| 3 | 00 _H 01 _H | Out of Paper Paper Present |
| 4 | 00 _H 01 _H | Head Open Head Closed |

Head Status (SOH + HC)

Upon receipt of an **SOH** (hexadecimal 01) followed immediately by an ASCII **HC** (hexadecimal 4843) causes the printer to return a 1 byte Head Fault Status Word bounded by an **STX-ETX** pair that reports the current operating status of the printer head. Before the printer will respond to this command, it must be in the Head Check Mode (DSW2-3 = On).

| BYTE NUMBER | HEX VALUE | DESCRIPTION |
|-------------|-----------|---|
| 1 | 00 01 | Print Head Ok Electrical Fault in Print Head |

Status Response (Cont)**System Version Information**

Upon receipt of an **SOH** (hexadecimal 01) followed immediately by an ASCII **SB** causes the printer to return a 50 byte Printer Status Word bounded by an **STX-ETX** pair that reports the system version of the printer.

| BYTE NUMBER | VALUE | DESCRIPTION |
|-------------|-------|------------------------------|
| 1-50 | ASCII | Firmware Version Information |

Memory Status

Upon receipt of an **SOH** (hexadecimal 01) followed immediately by an ASCII **EB** (hexadecimal 4542) causes the printer to return a 24 byte Memory Status Word bounded by an **STX-ETX** pair that reports the current user memory allocation.

| BYTE NUMBER | VALUE | DESCRIPTION |
|-------------|-------|---------------------------|
| 1-4 | Hex | Free Font Memory |
| 5-8 | Hex | Total Font Memory |
| 9-12 | Hex | Free Form Overlay Memory |
| 13-16 | Hex | Total Form Overlay Memory |
| 17-20 | Hex | Free Graphic Memory |
| 21-24 | Hex | Total Graphic Memory |

Form OverlayStatus (SOH + FO)

Upon receipt of an **SOH** (hexadecimal 01) followed immediately by an ASCII **FO** (hexadecimal 464F) causes the printer to return a 18 byte Form Overly Status Word bounded by an **STX-ETX** pair that reports the Forms downloaded into the printer.

| BYTE NUMBER | VALUE | DESCRIPTION |
|-------------|----------|--|
| 1-2 | 01 to 99 | Form Registration Number (ASCII value) |
| 3-18 | ASCII | Form Name |

Status Response (Cont)**Font Configuration (SOH + FG)**

Upon receipt of an **SOH** (hexadecimal 01) followed immediately by an **FG** (hexadecimal 4647) causes the printer to return a 102 byte Font/Graphics Status Word bounded by an **STX-ETX** pair that reports information on the stored font or graphic.

Note: The printer must be in the Font/Graphic Download mode before a response will be received.

| BYTE NUMBER | VALUE | DESCRIPTION |
|-------------|--------|----------------------------------|
| 1-2 | 00-99 | Font ID Number |
| 3-4 | 0 1 | Font Graphic |
| 5-36 | ASCII | Font Name |
| 37-48 | ASCII | Font Style |
| 49-52 | ASCII | Font Point Size |
| 53-54 | Hex | Character Width in dots |
| 54-60 | Hex | Character Height in dots |
| 57-60 | Hex | Font Size |
| 58-64 | Hex | Font Registration Number |
| 65-68 | Hex | Font Data Top Address |
| 69-72 | Hex | Total Size |
| 73-74 | Hex | Vertical/Horizontal Writing Flag |
| 75 | Hex | Character Pitch, Fixed/Variable |
| 76 | Hex | Family Attribute |
| 77 | Hex | Character Set |
| 78 | Hex | Italic Attribute |
| 79-80 | Hex | Weight Attribute |
| 81-82 | Hex | Spread |
| 83-84 | Hex | Assent in dots |
| 85-86 | Hex | Registration Start Code |
| 86-87 | Hex | Registration End Code |
| 88-95 | Hex | Reserved |
| 96-98 | Hex | Code |
| 99-100 | Hex | Horizontal Valid Size |
| 101-102 | Hex | Left Gap Size |

Section 3. Interface Specifications

Interface Status

Upon receipt of an **SOH** (hexadecimal 01) followed immediately by an ASCII **IG** causes the printer to return a 1 byte Interface Status Word bounded by an **STX-ETX** pair that reports the type of interface connection currently set in the printer.

| BYTE NUMBER | VALUE | DESCRIPTION |
|-------------|-------|----------------------|
| 1 | 0 | IEEE 1284 Parallel |
| | 1 | Serial RS232 |
| | 2 | Local Area Network |
| | 3 | Universal Serial Bus |

Serial Interface Status

Upon receipt of an **SOH** (hexadecimal 01) followed immediately by an ASCII **H2** causes the printer to return a 5 byte Serial IF Status Word bounded by an **STX-ETX** pair that reports the current operating parameters of the Serial RS232 Interface.

| BYTE NUMBER | VALUE | DESCRIPTION |
|-------------|-------|---|
| 1 | 0 | 9600 BPS |
| | 1 | 19200 BPS |
| | 2 | 38400 BPS |
| | 3 | 57600 BPS |
| 2 | 0 | No Parity |
| | 1 | Odd Parity |
| | 3 | Even Parity |
| 3 | 0 | 1 Stop Bit |
| | 1 | 2 Stop Bits |
| 4 | 0 | Single Item Buffer with Ready/Busy Flow Control |
| | 1 | Multi-Item Buffer with Ready/Busy Flow Control |
| | 2 | X-ON/X-OFF Flow Control |
| | 3 | Status 4 Bi-Comm |
| | 4 | Status 3 Bi-Comm |

3.9 Accessory (EXT) Connector

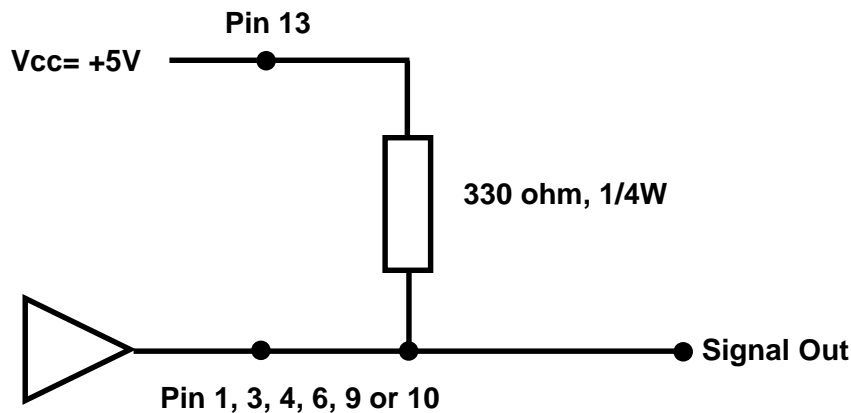
The EXT connector on the rear panel of the M-8485Se printer is intended for use with the external printer accessories such as label rewinders or applicators. The 14 pin Centronics type connector provides a choice of four different output signals along with various error conditions. A DB-9 to 14 pin Centronics adapter cable is provided for legacy applications.

Pin Assignments

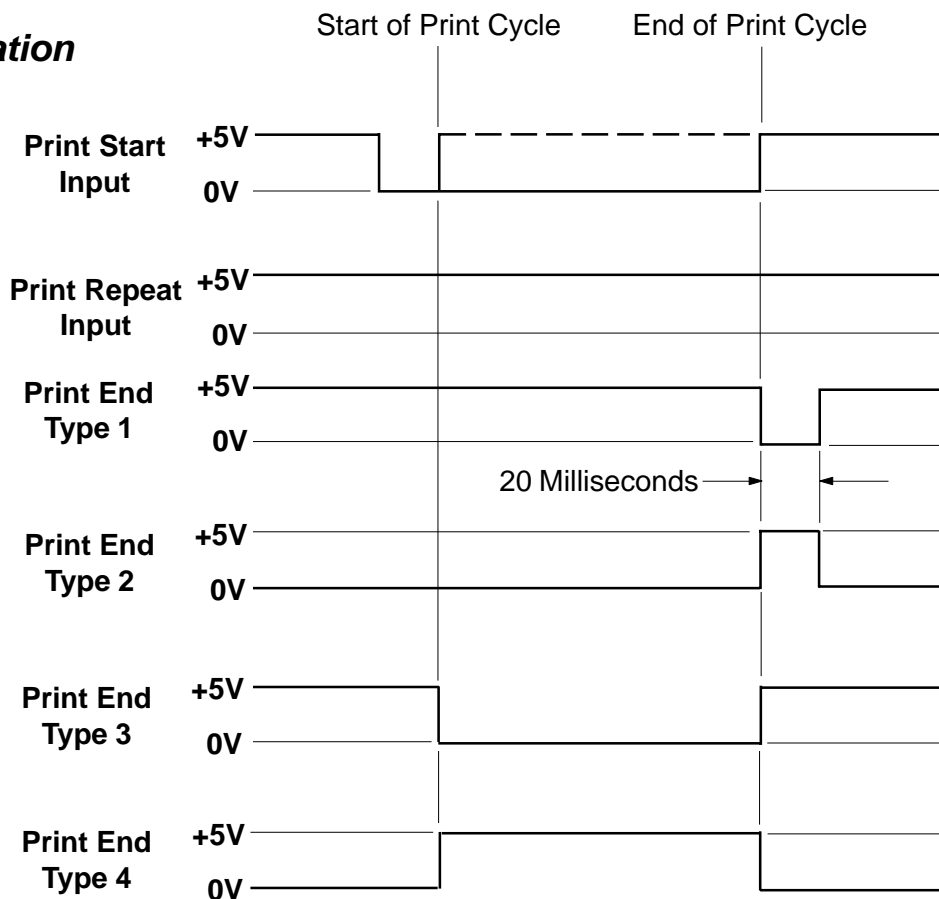
| PIN | DIRECTION | SIGNAL DESCRIPTION |
|-----|------------|--|
| 13 | To Host | Vcc +/-5V |
| 10 | To Host | Ribbon Near End - This pin goes high when the amount of ribbon on the unwind shaft is approximately 46 feet (14 m). The output will be low when the ribbon is completely out. |
| 4 | To Host | Error - This pin goes low when the printer detects an error condition such as head open or receiving buffer is full. |
| 7 | To Printer | Reprint - A duplicate of the last label in a print job will be reprinted when this signal is received. |
| 5 | To Printer | Print Start - The printer will print one label when this pin is pulled to ground. This signal must be enabled by placing switch DSW3-5 on the Control Panel in the OFF position. |
| 6 | To Host | End Print - It is used to drive an applicator or other external device requiring synchronization with the print cycle. You may choose between four types of output signals using control panel DSW3-6 and DSW3-7 selections. See timing charts on next page. |
| 1 | To Host | Label Out - This pin goes low (0V) when a label error exists. |
| 3 | To Host | Ribbon Out - This pin goes low (0V) when ribbon is out. |
| 2 | Reference | Signal Ground |
| 8 | To Printer | +5V Sensor Reference |
| 9 | To Host | Off Line - This pin goes low (0V) when the printer is Off Line. |
| 11 | | Reserved |
| 12 | To Host | +24V +/- 10% @2A - Power for external devices |
| 14 | | Frame Ground |

Section 3. Interface Specifications

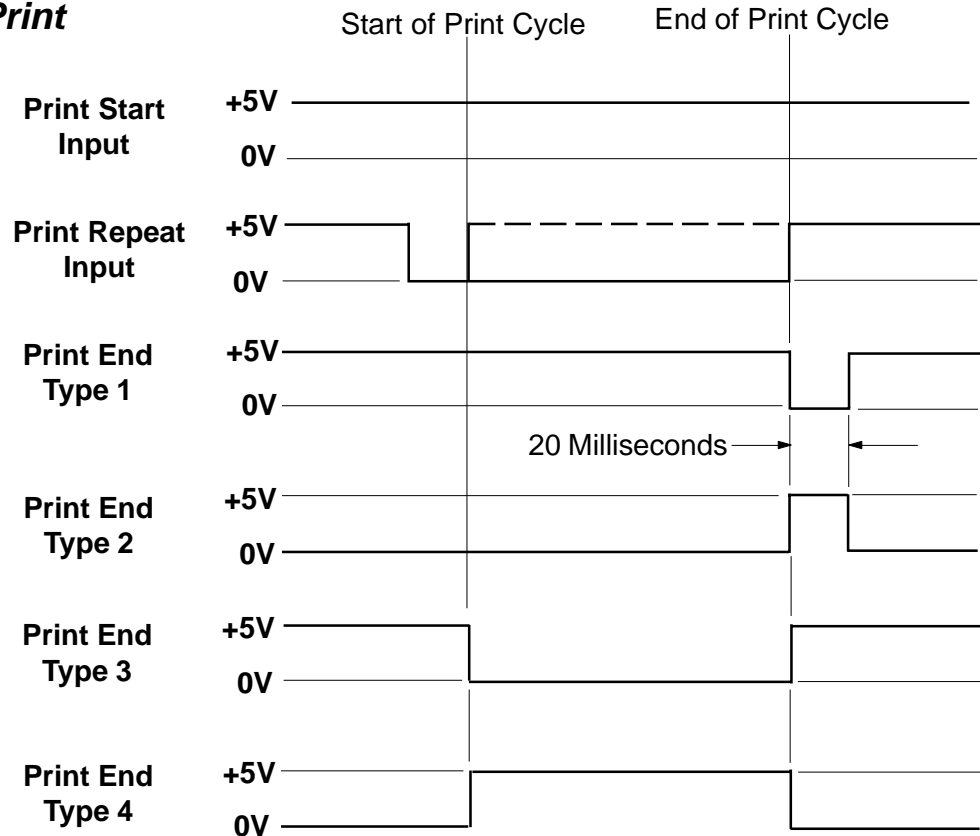
NOTE: The signals on pins 1, 3, 4, 6, 9 and 10 each have an open collector output. These pins normally measure +.07V maximum when a true condition exists. If a false condition occurs, the voltage will drop to 0V. To achieve a signal level of +5V, you must add a 330 ohm, 1/4 W pull-up resistor between the open collector output pin and Vcc (pin 13) as illustrated. This will provide a signal level of +5V for a true condition and 0V when a false condition exists. The maximum voltage that can be applied to these pins is +50V and the maximum current they can sink is 500 milliamps.



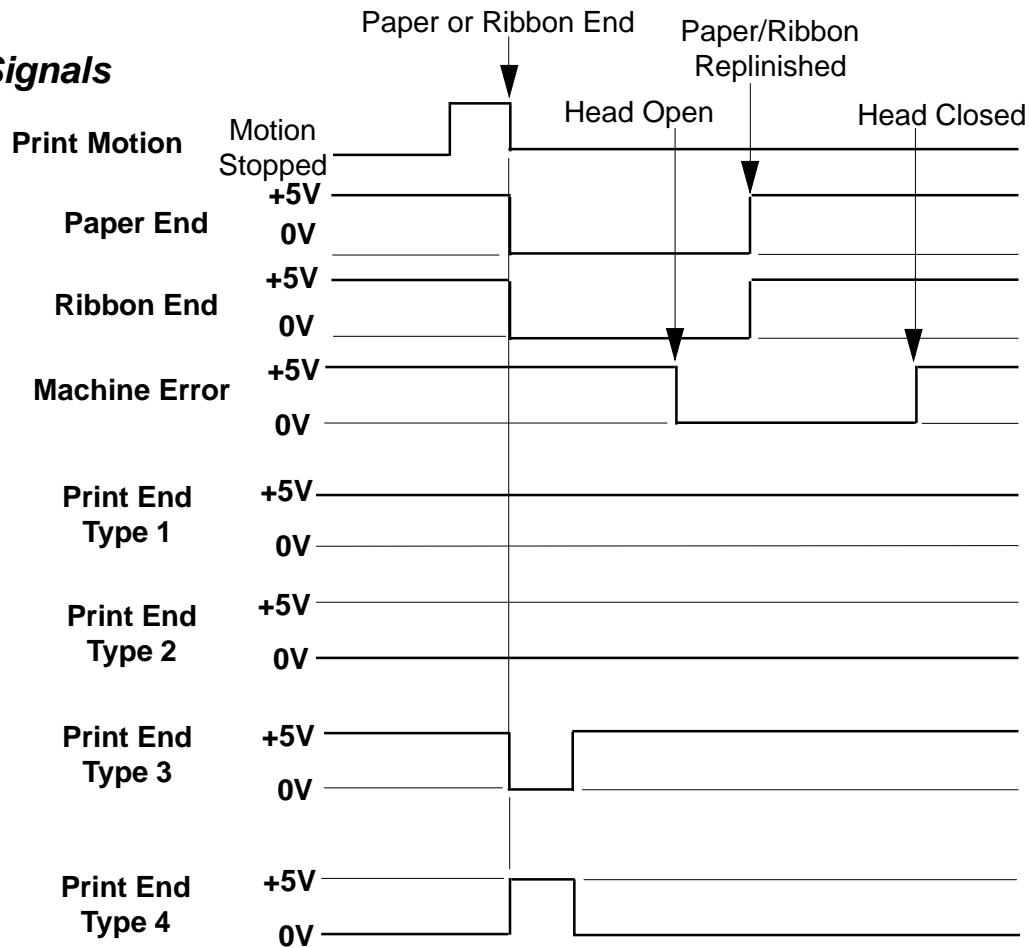
Standard Operation



Repeat Print



Error Signals



Section 4

Electrical Checks and Adjustments

4.1 Overview

This chapter describes how to check the M-8485Se printer voltage levels and adjust threshold sensor voltages.

The power supply converts 125 VAC into regulated DC voltages. The printer uses: +5V and +24V. These DC voltages are not adjustable, however you can measure these DC voltages at test points located on the Service Board. Section 4-2 contains procedures for measuring DC voltage levels.

You can adjust threshold voltage levels for label sensors. These adjustments are made to allow for variations in the characteristics of the labels used with the printer. If you cannot calibrate the label sensor voltage level within the specified voltage range, you should reposition the label sensor by following the adjustment procedures included in this section. After completing the label sensor adjustment procedures, perform the label sensor voltage level adjustment procedure.

You can check or adjust:

- DC Power Voltage
- Label Pitch Sensor
- Ribbon Sensor
- Pitch Offset
- Label Positions
- Print Darkness
- Calendar Clock Setting

***Checks and adjustments in this section require standard metric tools.
Other equipment is listed where needed.***

4.2 DC Power Voltage Checks

To check voltage levels, first check the fuses (Section 6-3) and replace if necessary then perform the following steps:

- | | |
|---------------------|---|
| Required Equipment: | <ul style="list-style-type: none"> • DC Voltmeter • #2 Phillips Screwdriver |
|---------------------|---|

| STEP | PROCEDURE |
|------|---|
| 1. | Loosen (2) screws holding the service board access cover to the rear of the cabinet. Slide off the cover for access to the service board. Fig. 4-1 |
| 2. | Connect the printer AC power cord to a grounded AC outlet. Place the power switch in the OFF position. |
| 3. | Attach the DC voltmeter negative lead to the test point labeled SG (Ground) on the service board. Attach the DC voltmeter positive lead to the corresponding voltage test point and place the power switch in the On position. Fig. 4-2 & Fig. 4-3 |
| 4. | Confirm voltages are correct. If not then replace the power supply. Refer to Section 6-4. |
| 5. | After performing tests, replace the access cover. |

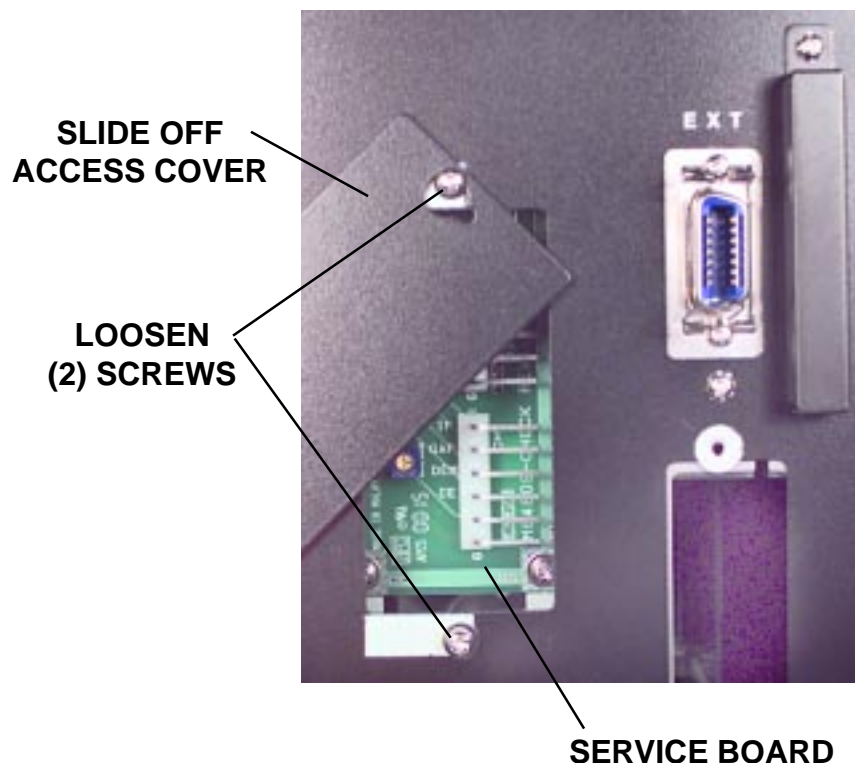


Fig. 4-1

DC Power Voltage Checks

| Test Points | Range | Nominal Range |
|-------------|----------------|---------------|
| SG + 5V | +4.8 to +5.2V | +5V |
| SG + 2.0V | +1.9 to +2.1V | +2.0V |
| SG + 3.3V | +3.1 to 3.5V | +3.3V |
| SG + 24V | +23.5 to 24.5V | +24V |

Fig. 4-2

NOTE: The power supply voltages are not adjustable. All voltages must read within the nominal value for correct operation of the printer.

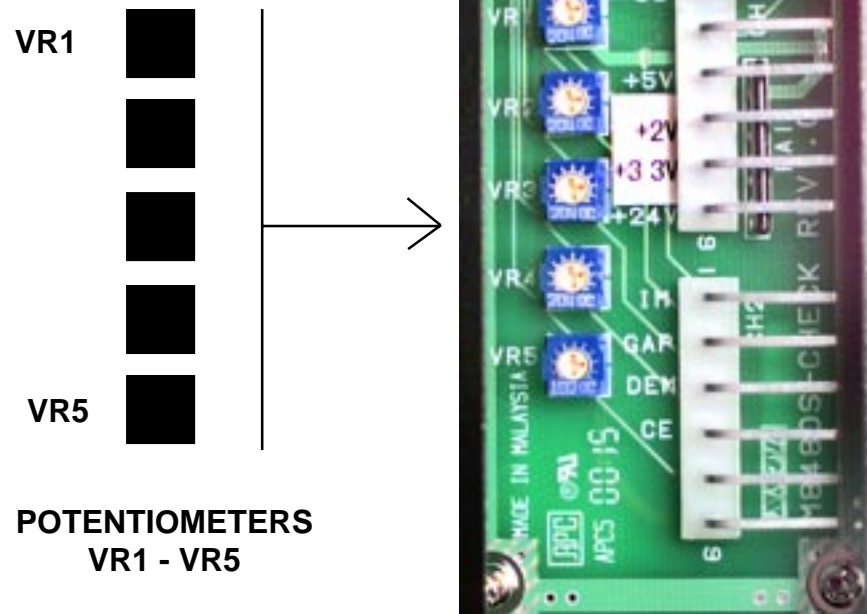


Fig. 4-3

SERVICE BOARD

4.3 See Thru Label Pitch Sensor Adjustment

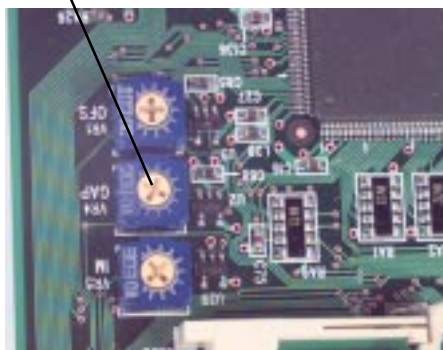
- | | |
|---------------------|--|
| Required Equipment: | <ul style="list-style-type: none"> • DC Voltmeter • Small Phillips screwdriver (for potentiometer adjustments) |
|---------------------|--|

IMPORTANT! Use pressure sensitive label stock that is rated for use with thermal transfer printers using see thru (transmissive) sensing.

To adjust the See Thru Label Pitch Sensor voltage, perform the following steps:

| STEP | PROCEDURE |
|------|---|
| 1. | Loosen (2) screws holding the service board access cover to the rear of the cabinet. Slide off the cover for access to the service board. |
| 2. | Connect the printer AC power cord to a grounded AC outlet. Place the power switch in the OFF position. |
| 3. | Go to the Gap Input screen on display panel. |
| 4. | LOW LEVEL (BACKING PAPER) ADJUSTMENT (GAP) Position the label gap or a strip of backing sheet in the sensor's field of view. Adjust VR2 on the Service PCB to 0.3 - 0.5V. Fig. 4-4 NOTE: Sensor is adjustable and can be moved for holes and notches. |
| 5. | HIGH LEVEL (LABEL) ADJUSTMENT Position a label in the sensor's field of view. Check that the difference between the high and low level is 1V or higher. If the voltage reading is less than 1V repeat step 4. (Ref. HIGH LEVEL (Label) - LOW LEVEL (GAP) > -1V) Level difference should be set as maximum. |
| 6. | After performing tests, replace the access cover. |

ADJUST VR4
ON MAIN PCB
TO MIDPOINT
IF NECESSARY



ADJUST VR2 ON
SERVICE BOARD

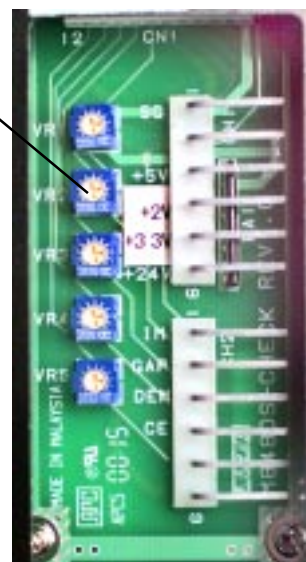


Fig. 4-4

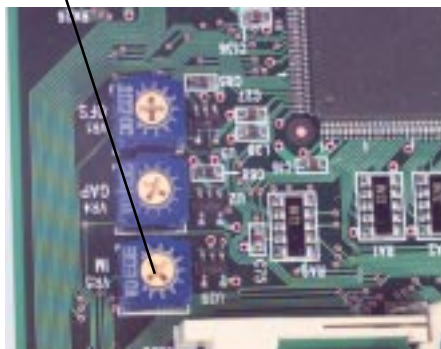
4.4 Reflective Label Pitch Sensor Adjustment

| | |
|---------------------|--|
| Required Equipment: | <ul style="list-style-type: none"> • DC Voltmeter • Small Phillips screwdriver (for potentiometer adjustments) |
|---------------------|--|

To adjust the Reflective Label Pitch Sensor voltage, perform the following steps:

| STEP | PROCEDURE |
|------|---|
| 1. | Loosen (2) screws holding the service board access cover to the rear of the cabinet. Slide off the cover for access to the service board. Fig. 4-1 |
| 2. | Load a roll of label stock with "Eye-Marks" into the printer. Leave the head lock lever in the open position. |
| 3. | Connect the printer AC power cord to a grounded AC outlet. Place the power switch in the OFF position. |
| 4. | Go to "Eye-Mark" input screen on display panel. |
| 5. | LOW LEVEL (NO "Eye-Mark") ADJUSTMENT Position a label in the sensor's field of view (except for the black mark part). Adjust VR1 on the Service PCB to 0.3 - 0.5V. Fig. 4-5 NOTE: Sensor is fixed. |
| 6. | HIGH LEVEL ("Eye-Mark") ADJUSTMENT Position the non-reflective "Eye-Mark" printed on the reverse side of the label backing in the sensor's field of view. Check that the difference between the high and low level is 1V or higher. If the voltage reading is less than 1V repeat step 5. (Ref. HIGH LEVEL with "Eye-Mark" - LOW LEVEL (GAP) > -1V) Level difference should be set as maximum. |
| 7. | After performing tests, replace the access cover. |

ADJUST VR5
ON MAIN PCB
TO MIDPOINT
IF NECESSARY



ADJUST VR2 ON
SERVICE BOARD

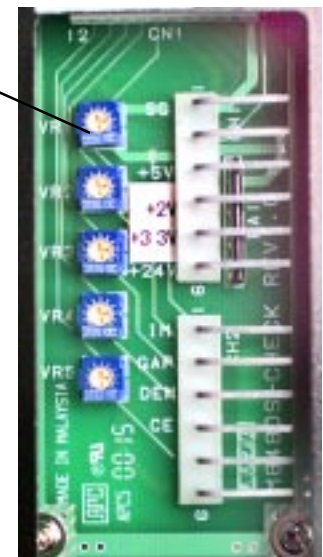


Fig. 4-5

4.5 Ribbon Sensor Adjustment

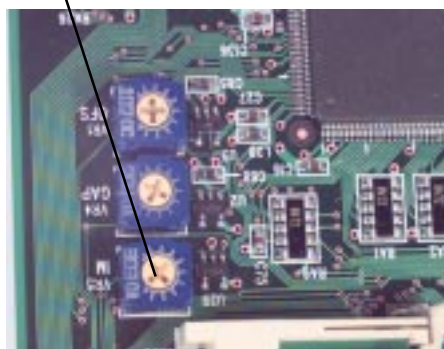
- | | |
|---------------------|--|
| Required Equipment: | <ul style="list-style-type: none"> • DC Voltmeter • Small Phillips screwdriver (for potentiometer adjustments) |
|---------------------|--|

VR3 on the Service PCB is used.

To adjust the Ribbon Sensor voltage, perform the following steps:

| STEP | PROCEDURE |
|------|---|
| 1. | Loosen (2) screws holding the service board access cover to the rear of the cabinet. Slide off the cover for access to the service board. Fig. 4-1 |
| 2. | Connect the printer AC power cord to a grounded AC outlet. Place the power switch in the OFF position. |
| 3. | Go to the input screen on display panel. |
| 4. | LOW LEVEL (No Slit) ADJUSTMENT Turn the ribbon unwind boss slowly so that no slit is in view of the sensor. Adjust VR3 on the Service PCB to 0.3 - 0.5V. Fig. 4-6 |
| 5. | HIGH LEVEL (With Slit) ADJUSTMENT Turn the ribbon unwind boss slowly so that the slit is in centered on the sensor. Check that the difference between the high and low level is 2.0V or higher. If the voltage reading is less than 2V repeat step 4. |
| 6. | After performing tests, replace the access cover. |

**ADJUST VR5
ON MAIN PCB
TO MIDPOINT
IF NECESSARY**



**ADJUST VR3 ON
SERVICE BOARD**

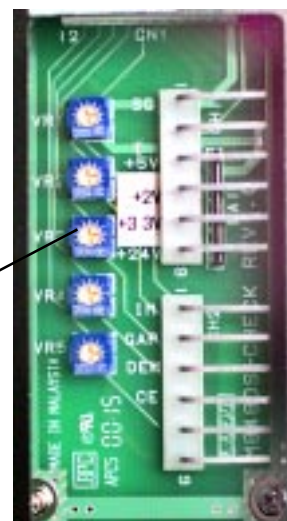
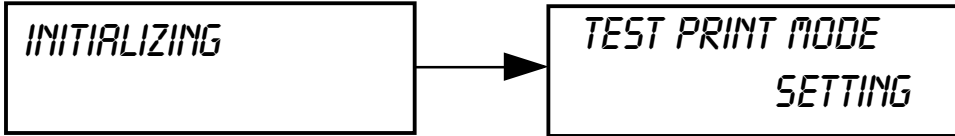






Fig. 4-6

4.6a Pitch Offset Sensor Adjustment (User Setting)

Pitch Offset is adjusted with the PITCH potentiometer on the Dip Switch Panel.


| STEP | PROCEDURE |
|------|--|
| 1. | <p>Turn On the power while simultaneously pressing the FEED key. When the printer emits one long beep, release the FEED key to display the Initializing screen. It will then immediately display Test Print Mode Setting screen.</p> <div style="text-align: center;">  <pre> graph LR A[INITIALIZING] --> B[TEST PRINT MODE SETTING] </pre> </div> |
| 2. | <p>Press the FEED key to advance to the Test Print Size screen. It will default to 12CM size.</p> <div style="text-align: center;">  </div> |
| 3. | <p>Press the FEED key to advance to the Test Print Size screen. It will default to 12CM size. Press the FEED key to accept this size or press the LINE key to cycle through other sizes. The screen will default to 04CM.</p> <div style="text-align: center;">  </div> |
| 4. | <p>Press the FEED key to advance to the User Test Print Size screen.</p> <div style="text-align: center;">  </div> <p>Press the FEED key to start a test print. To stop printing temporarily, press the FEED key again.</p> <p>Caution: Excessive printing will cause degradation of the print head since all elements of the print head are heated at once. Be extra cautious if 5 inch wide labels are used.</p> |
| 5. | <p>Check the deviation of the print position by the scales on the two sides of the test print. Adjust position with the PITCH potentiometer on the Dip Switch Panel. The range is +/-3.75 mm.</p> |
| 6. | <p>Press the FEED key to stop the test print. Turn off the power switch.</p> <div style="text-align: right;">  <p>PITCH POTENTIOMETER</p> </div> |

4.6b Pitch Offset Sensor Adjustment (Factory Setting)

Pitch Offset is adjusted with the PITCH potentiometer on the Dip Switch Panel and is a factory setting.

| STEP | PROCEDURE |
|------|---|
| 1. | Place the Pitch volume on the Dip Switch Panel to the center (12:00) position. |
| 2. | Place DSW2-4 in the ON position. |
| 3. | Turn On the power switch while simultaneously pressing the LINE and FEED keys. When the printer emits one long beep, release the keys to display the Initializing screen. It will then immediately display Maintenance Mode screen. <div><div>INITIALIZING</div><div>MAINTENANCE MODE DIPSW2-4 ON->OFF</div></div> |
| 4. | Place DSW2-4 in the OFF position to display the next screen. <div>FACTORY MODE</div> |
| 5. | Press the FEED key to display the next screen. <div>COUNTER CLEAR NONE</div> |
| 6. | Press the FEED key to advance to the Test Print Size screen. It will default to Large. Press the FEED key to accept this size or press the LINE key to select Small. <div>PRINT SIZE SMALL LARGE</div> |
| 7. | Press the FEED key to advance to the next screen. <div>TEST PRINT PRESS FEED KEY</div> |
| 8. | Press the FEED key to start a test print. To stop printing temporarily, press the FEED key again. <p>Caution: Excessive printing will cause degradation of the print head since all elements of the print head are heated at once. Be extra cautious if 5 inch wide labels are used.</p> |

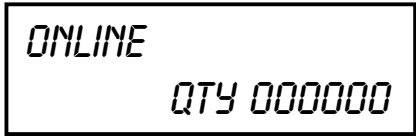
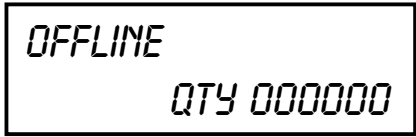
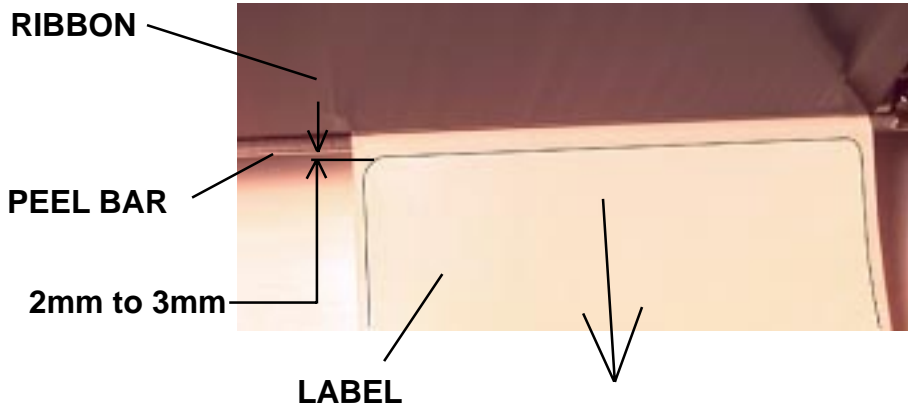

Pitch Offset Sensor Adjustment (Factory Setting)

| STEP | PROCEDURE |
|------|---|
| 9. | <p>Check the deviation of the print position by the scales on the two sides of the test print. Adjust position with the PITCH potentiometer on the Dip Switch Panel. The range is +/-3.75 mm.</p>  |
| 10. | <p>Press the FEED key to stop the test print. Turn Off the power switch.</p> |

**PITCH
POTENTIOMETER**

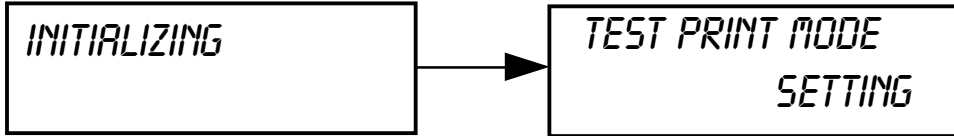



4.7 Feed/Backfeed Adjustment

Feed/Backfeed adjustment (label end distance from the dispenser bar) is made using the OFFSET potentiometer on the Dip Switch Panel.

| STEP | PROCEDURE |
|------|--|
| 1. | <p>Turn On the power switch to display the Online screen.</p>  |
| 2. | <p>Press the LINE key to set printer to the Offline screen.</p>  |
| 3. | <p>Press the FEED key to feed a label. Confirm the end of the label is 2mm to 3mm from the peel bar.</p>  <p>If necessary, adjust the Offset potentiometer on the Dip Switch Panel to obtain the correct position.</p>  <p>OFFSET POTENTIOMETER</p> |
| 4. | <p>Turn Off the power switch.</p> |

4.8 Print Darkness Adjustment

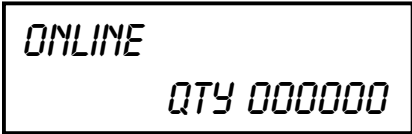

Print Darkness adjustment is made using the PRINT potentiometer on the Dip Switch Panel.

| STEP | PROCEDURE |
|------|--|
| 1. | Place the Print volume on the Dip Switch Panel to the center (12:00) position. |
| 2. | Turn On the power while simultaneously pressing the FEED key. When the printer emits one long beep, release the FEED key to display the Initializing screen. It will then immediately display Test Print Mode Setting screen |
| |  <pre> graph LR A[INITIALIZING] --> B[TEST PRINT MODE SETTING] </pre> |
| 3. | Press the FEED key to advance to the Test Print Size screen. It will default to 12CM size. |
| |  |
| 4. | Press the FEED key to accept this size or press the LINE key to cycle through other sizes. The screen will default to 04CM. |
| |  |
| 5. | Press the FEED key to advance to the User Test Print Size screen. |
| |  |
| 6. | Press the FEED key to start a test print. To stop printing temporarily, press the FEED key again. |
| | <p>Caution: Excessive printing will cause degradation of the print head since all elements of the print head are heated at once. Be extra cautious if 5 inch wide labels are used.</p> |
| 7. | If necessary, adjust the print darkness by adjusting the Print potentiometer on the Dip Switch Panel. |
| 8. | Press the FEED key to stop the test print. Turn off the power switch. |



**PRINT
POTENTIOMETER**

4.9 LCD Darkness Adjustment

| STEP | PROCEDURE |
|------|--|
| 1. | <p>Turn On the power switch to display the Online screen.</p>  |
| 2. | <p>Adjust the Display potentiometer on the front panel if necessary for best message viewing.</p>  <p style="text-align: center;">DISPLAY POTENTIOMETER</p> |
| 3. | <p>Turn Off the power switch.</p> |

4.10 Calendar Clock Setting

| STEP | PROCEDURE |
|------|--|
| 1. | <p>Turn On the power while simultaneously pressing the LINE key. When the printer emits one long beep, release the LINE key to display the Initializing screen. It will then immediately display ADVANCED Mode screen.</p> <div style="display: flex; align-items: center; justify-content: center;"> <div style="border: 1px solid black; padding: 5px; margin: 5px;">INITIALIZING</div> <div style="margin: 0 10px;">→</div> <div style="border: 1px solid black; padding: 5px; margin: 5px;">ADVANCED MODE</div> </div> |
| 2. | <p>Press the FEED key 4 times to advance to the Calendar Enabled screen.</p> <div style="border: 1px solid black; padding: 5px; text-align: center; margin: 10px auto; width: 200px;"> CALENDAR ENABLED YES NO </div> |
| 3. | <p>Press the LINE key to select YES then press the FEED key.</p> <div style="border: 1px solid black; padding: 5px; text-align: center; margin: 10px auto; width: 200px;"> CALENDAR 00/00/00 00:00 </div> |
| 4. | <p>Set Month, Day, Hour and Minute as follows:</p> <p>a) Press the FEED key until the cursor is positioned under the digit you wish to change. Then press the LINE key to change the value.</p> <p>b) Press the FEED key to advance to the next set of digits. Press the LINE key to change the values as in Step a).</p> |
| 5. | <p>After the Minute setting is finished, press the FEED key to advance to the next screen.</p> <div style="border: 1px solid black; padding: 5px; text-align: center; margin: 10px auto; width: 200px;"> EURO CODE 05 </div> |
| 6. | <p>Turn off the power switch.</p> |

Section 5

Mechanical Adjustments

5.1 Overview

The M-8485Se Printer Engines contain adjustable mechanical sub-assemblies. This means that during your regular maintenance, your service technicians are able to make adjustments to reset the printer to factory specifications thereby ensuring optimum performance of your printer.

The main mechanical sub-assemblies are:

- Ribbon Unwind/Rewind Assembly
 - Ribbon Guide Roller Assembly
 - Print Head Assembly
 - Drive Belt Assembly
-

In this section you will find procedures for :

- Ribbon Clutch Adjustments
- Ribbon Guide Plate Adjustment
- Print Head Balance Adjustment
- Print Head Alignment
- Timing Belt Tension Adjustments
- Feed Roller Adjustment
- Peel Bar Adjustment
- Ribbon Unwind/Rewind Shaft Adjustment

5.2 Ribbon Clutch Adjustments

Excessive ribbon unwind and rewind tension will result in variable ribbon motion and could be the cause of print quality problems.

Follow the procedures 5.2.1 and 5.2.2 to verify that the ribbon unwind and rewind tensions are within specification or if adjustment of either clutch is necessary.

Required Equipment:
For 5.2.1 and 5.2.2

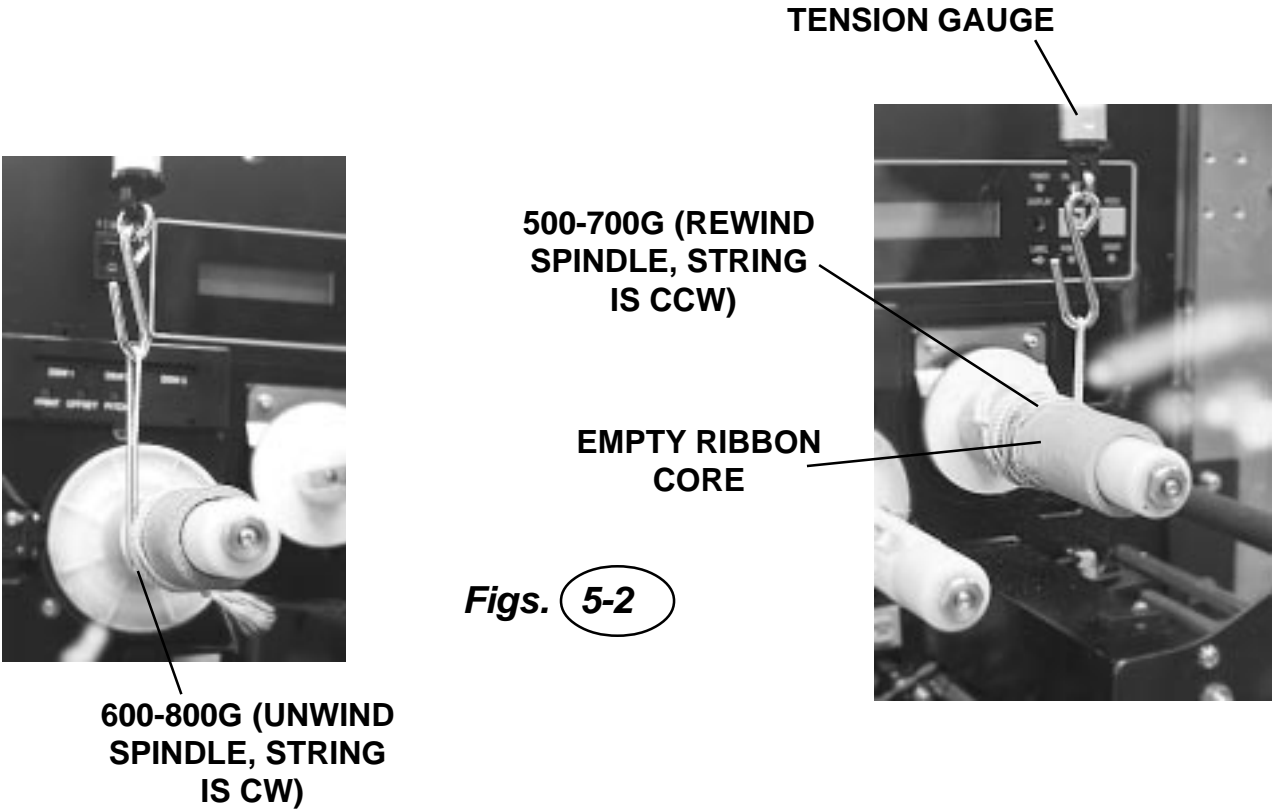
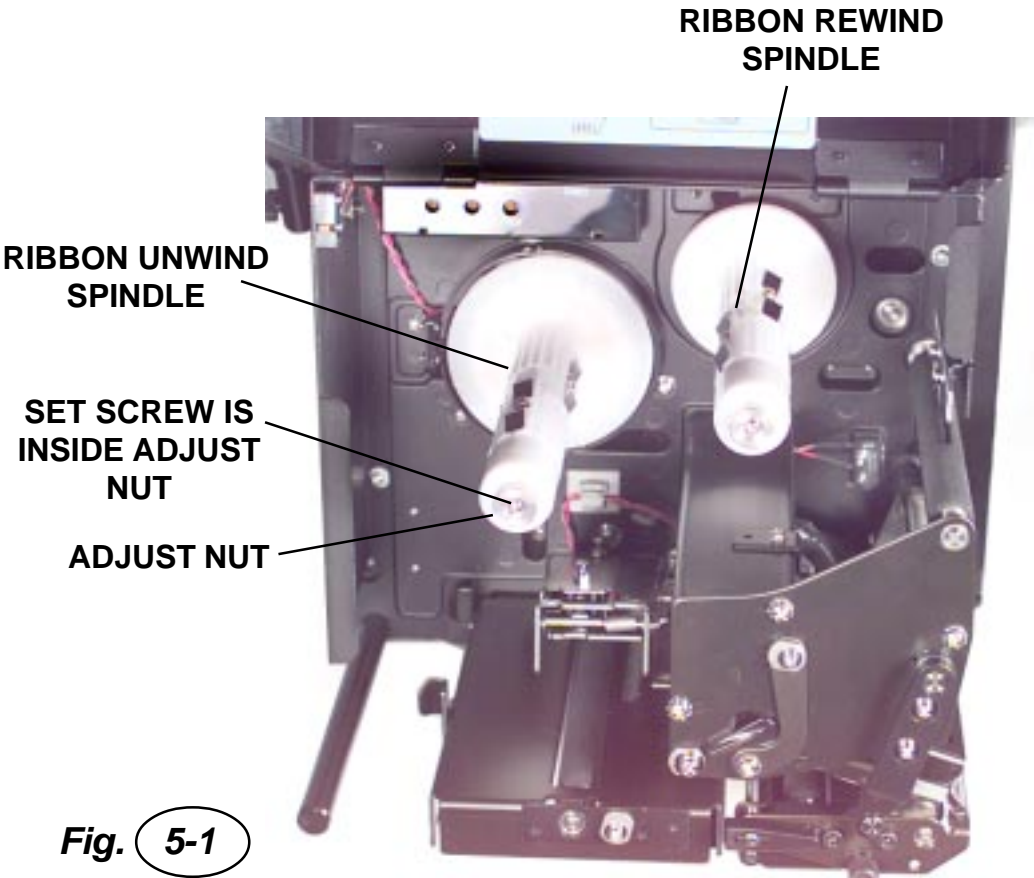
- 1 Kg Tension Gauge
- Ribbon Core, empty
- String
- 12mm Wrench
- #2 Phillips Screw Driver

5.2.1 Ribbon Unwind Clutch Adjustment

To adjust the Ribbon Unwind Clutch, perform the following steps:

| STEP | PROCEDURE |
|------|---|
| 1. | Remove the ribbon if installed. |
| 2. | Place an empty ribbon core on the ribbon unwind spindle. Attach the free end of the string to the tension gauge. Fig. 5-1, 5-2 |
| 3. | Wind the string tightly around the ribbon core in a single layer and in a clockwise direction. Attach the free end of the string to the tension gauge. |
| 4. | Gradually lift the tension gauge, pulling the string to unwind it from the core. Once the spindle begins to move, the gauge should indicate 600 to 800 grams of tension. Excessive or insufficient tension must be corrected by adjusting the ribbon unwind clutch. To adjust the clutch, loosen the set screw and move the adjust nut CW for more tension and CCW for less tension. Tighten the set screw and repeat Steps 3 and 4 until the correct tension is achieved. |

Ribbon Clutch Adjustments



5.2.2 Ribbon Rewind Clutch Adjustment

To adjust the Ribbon Rewind Clutch, perform the following steps:

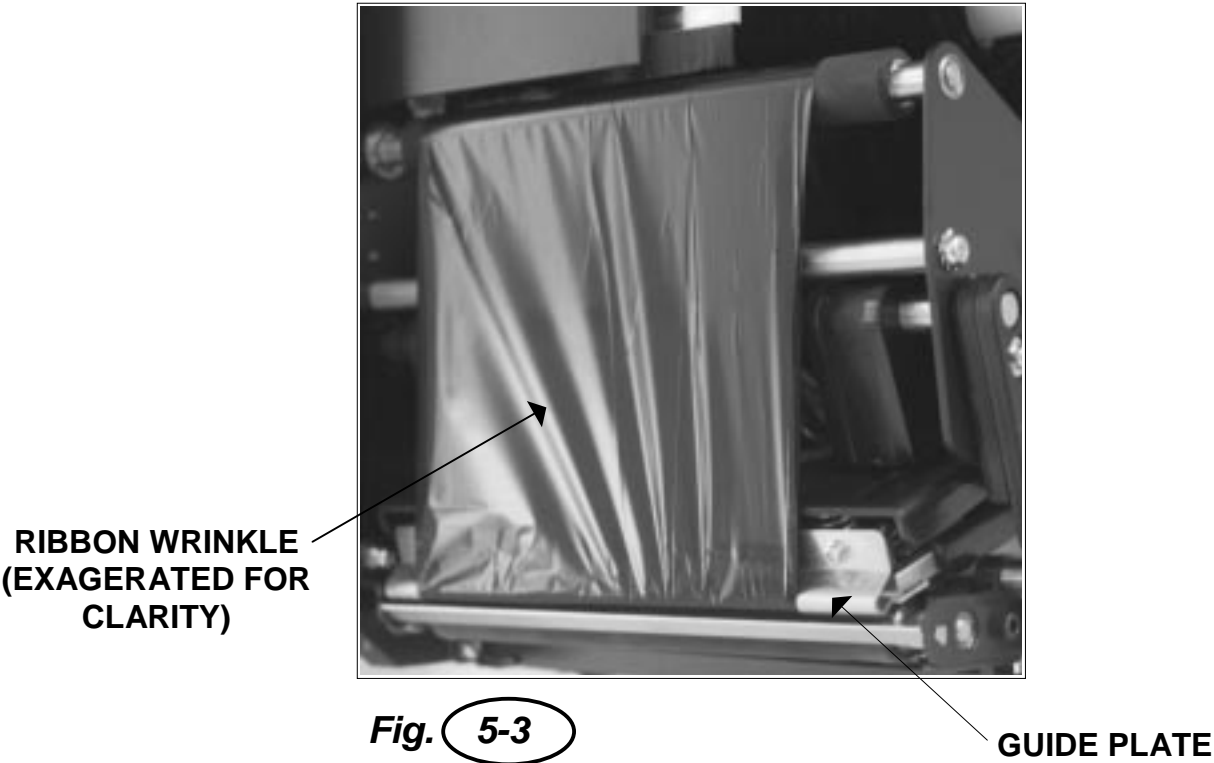
| STEP | PROCEDURE |
|------|--|
| 1. | Place an empty ribbon core on the ribbon wind spindle. Attach the free end of the string to the tension gauge. Fig. 5-1, 5-2 |
| 2. | Wind the string tightly around the ribbon core in a single layer and in a CCW direction. Attach the free end of the string to the tension gauge. |
| 3. | <p>Gradually lift the tension gauge, pulling the string to unwind it from the core. Once the spindle begins to move, the gauge should indicate 500 to 700 grams of tension. Excessive or insufficient tension must be corrected by adjusting the ribbon unwind clutch.</p> <p>To adjust the clutch, loosen the set screw and move the adjust nut to get the correct tension. Tighten the set screw and repeat Steps 3 and 4 until the correct tension is achieved.</p> |

5.3 Ribbon Guide Plate Adjustments

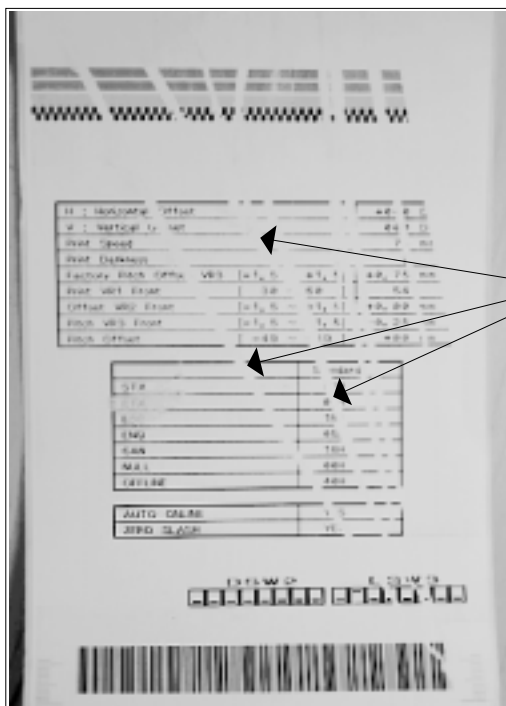
| | |
|---------------------|---|
| Required Equipment: | <ul style="list-style-type: none">• 10mm Open End Wrench• #2 Phillips Screw Driver |
|---------------------|---|

If the ribbon is not smooth across the guide plate (ribbon wrinkle) and adjustment is required, perform the following steps:

| STEP | PROCEDURE |
|------|---|
| 1. | Check for even ribbon tension by watching the ribbon movement under the guide plate as it moves upward toward the ribbon rewind spindle. If it appears uneven, proceed to Step 2. Fig. 5-3 and 5-4 |
| 2. | Loosen the (2) retaining screws and reposition the guide plate. Retighten the screws. Fig. 5-5 |
| 3. | Recheck the ribbon alignment and print. If results are not satisfactory or if wrinkles appear behind the head, adjust the Ribbon Shaft Eccentric Nut (Fig. 5-6) with a 10mm wrench and Phillips screwdriver. For additional refinement, perform Print Clutch Adjustment (Section 5.2), Print Head Balance Adjustment (Section 5.4) and/or Print Head Alignment (Section 5-5). |

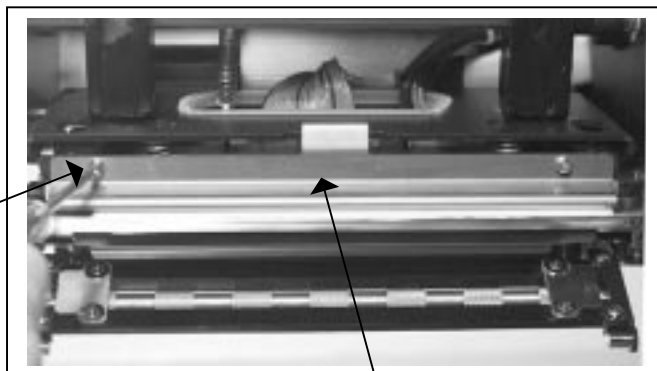


Ribbon Guide Plate Adjustments



DIAGONAL VOIDS (WHITE STREAKS) THAT "WALK" ACROSS LABEL, CAUSED BY RIBBON WRINKLE

Fig. 5-4



RETAINING SCREWS

Fig. 5-5

GUIDE PLATE

RIBBON

IF WRINKLES APPEAR BEHIND THE PRINT HEAD, ADJUST RIBBON SHAFT ECCENTRIC NUT WITH WRENCH AND PHILLIPS SCREWDRIVER

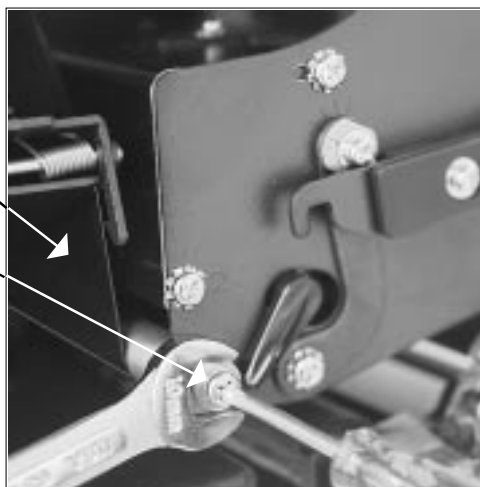


Fig. 5-6

5.4 Print Head Balance Adjustment

| | |
|---------------------|--|
| Required Equipment: | <ul style="list-style-type: none"> • 10mm Open End Wrench • #2 Phillips Screw Driver |
|---------------------|--|

To optimize print quality, perform the following steps to adjust the print head balance, using head pattern as a guide:

| STEP | PROCEDURE |
|------|--|
| 1. | Load the ribbon and label stock into the printer. |
| 2. | Loosen the screw holding spacer plate to side frame. Hold eccentric nut along flats with 10mm wrench and loosen holding screw. Turn the eccentric nut clockwise to increase the density of the inner side of the image/label. Turn the eccentric nut counter-clockwise to increase the density of the print on the outside of the image/label. Fig. 5-7 |
| 3. | Hold the eccentric nut in place with the 10mm wrench and tighten the screw. Do not turn the eccentric nut beyond the adjustment marks. |
| | Refer to sample labels for adjustment conditions. Fig. 5-8 |

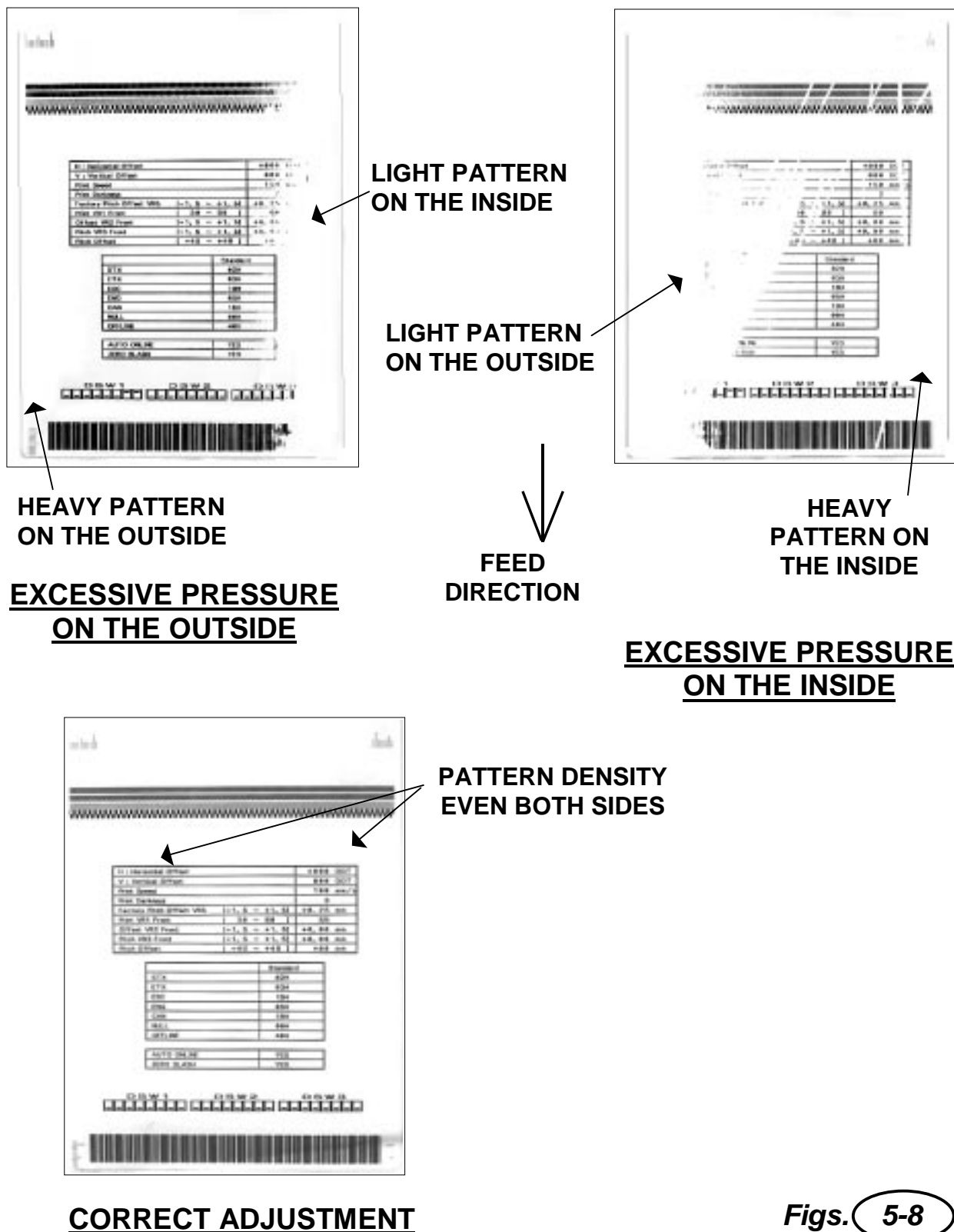
**LOOSEN SCREW ¼ TURN,
USE 10 MM WRENCH TO
ADJUST ECCENTRIC NUT CW
OR CCW AND TIGHTEN SCREW**

**LOOSEN SCREW HOLDING
SIDE PLATE TO FRAME**

Fig. 5-7



Print Head Balance Adjustment



Figs. 5-8

ILLUSTRATIONS SHOWN ARE EXAMPLES ONLY AND MAY NOT EXACTLY MATCH YOUR OUTPUT

5.5 Print Head Alignment

Required Equipment:

- Flat Head Screwdriver
- #2 Phillips Screwdriver

To adjust the print head alignment and make print quality consistent across label, perform the following steps:

| STEP | PROCEDURE |
|------|---|
| 1. | Loosen the (2) guide plate screws on the print head, one on the right side and one on the left. Loosen (1) post screw. Fig. 5-9A, & 5-9B |
| 2. | Move the position of the adjustment plate forward or backward by turning the flat head screwdriver in the adjustment slots while printing. Fig. 5-10 |
| 3. | Tighten all the screws. Refer to sample labels for adjustment conditions. Fig. 5-11 |

LOOSEN SCREWS
ON PRINT HEAD
TWO PLACES

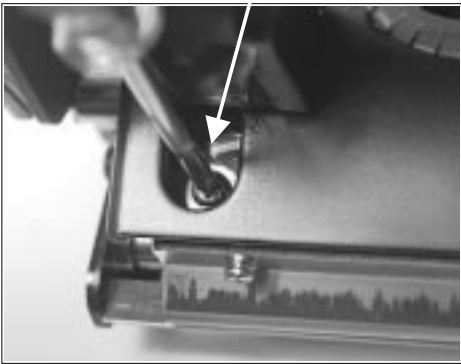


Fig. 5-9A

LOOSEN (1) POST SCREW

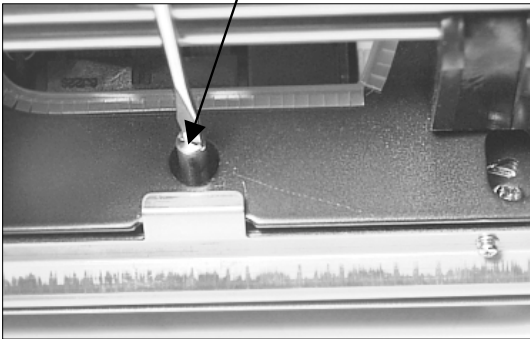
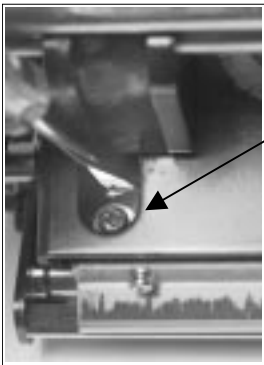


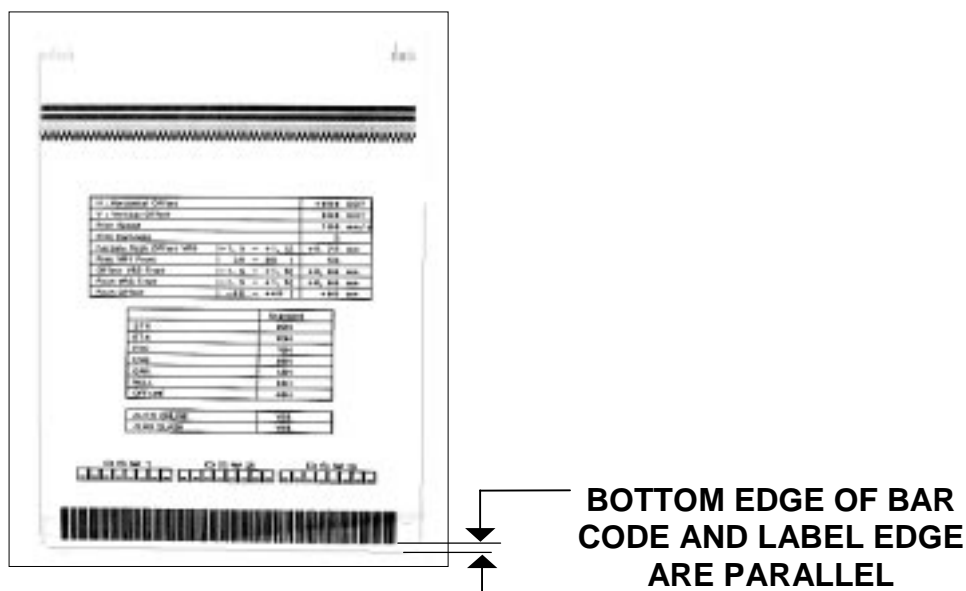
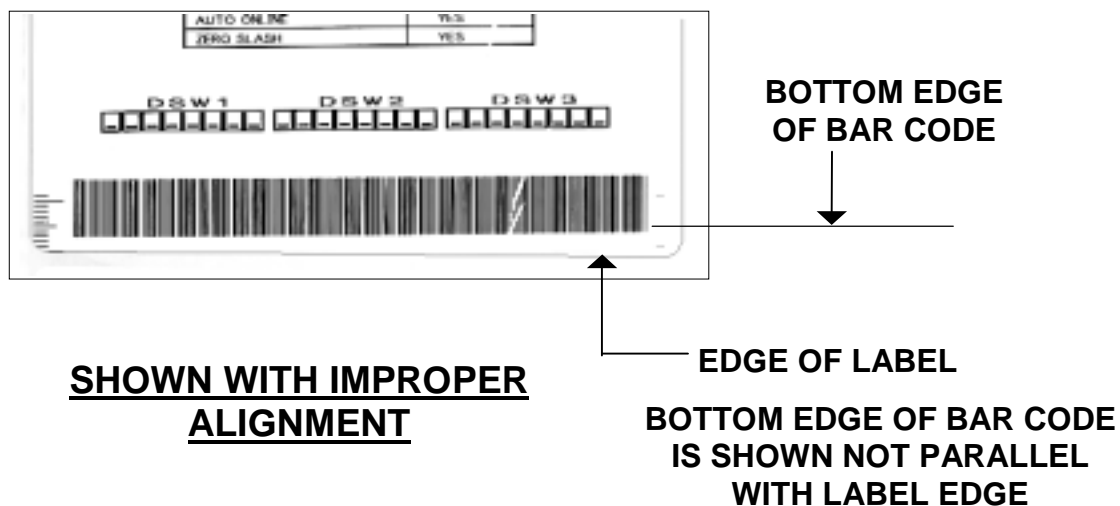
Fig. 5-9B



SCREWDRIVER IN
SLOTS OF HEAD
ADJUSTMENT PLATE

Fig. 5-10

Print Head Alignment



Figs. 5-11

ILLUSTRATIONS SHOWN ARE EXAMPLES ONLY AND MAY NOT EXACTLY MATCH YOUR OUTPUT

5.6 Timing Belt Tension Adjustment

Required Equipment:

- 500g Tension Gauge
- #2 Phillips Screwdriver

| STEP | PROCEDURE |
|------|---|
| 1. | Push the center of each timing belt with the tension gauge and note the tension reading when each belt is moved 1 to 2mm. Refer to Fig. 5-12 to identify Belts "A", "B" and "C" and Brackets #1, #2 and #3. |
| 2. | If the tension reading from Belt "B" is not within range of 500g, reposition bracket #2. Tighten screws when belt tension is correct. Fig. 5-13 |
| 3. | If the tension reading from Belt "C" is not within range of 500g, reposition bracket #3. Tighten screws when belt tension is correct. Fig. 5-14 |
| 4. | If the tension reading from Belt "A" is not within range of 500g, reposition bracket #1. The screws are accessible from the media side of the printer. Tighten screws when belt tension is correct. Fig. 5-15 & 5-16 |

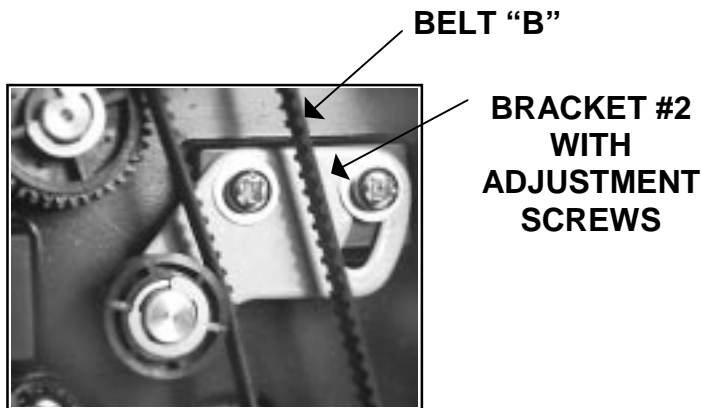


Fig. 5-13

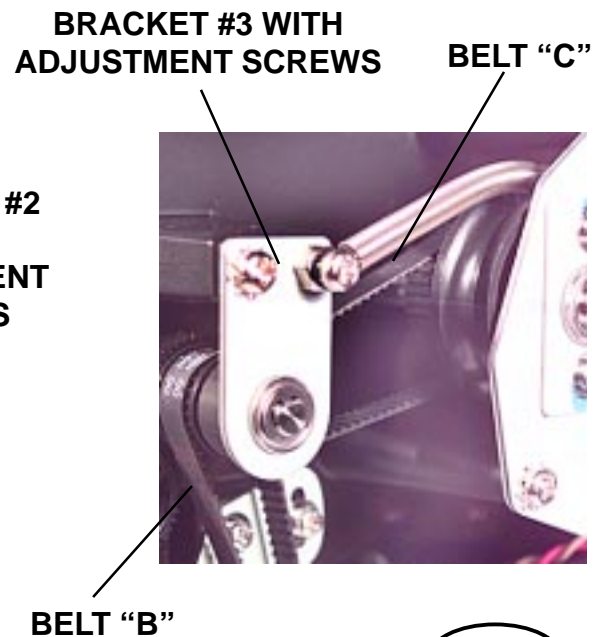


Fig. 5-14

Timing Belt Tension Adjustment

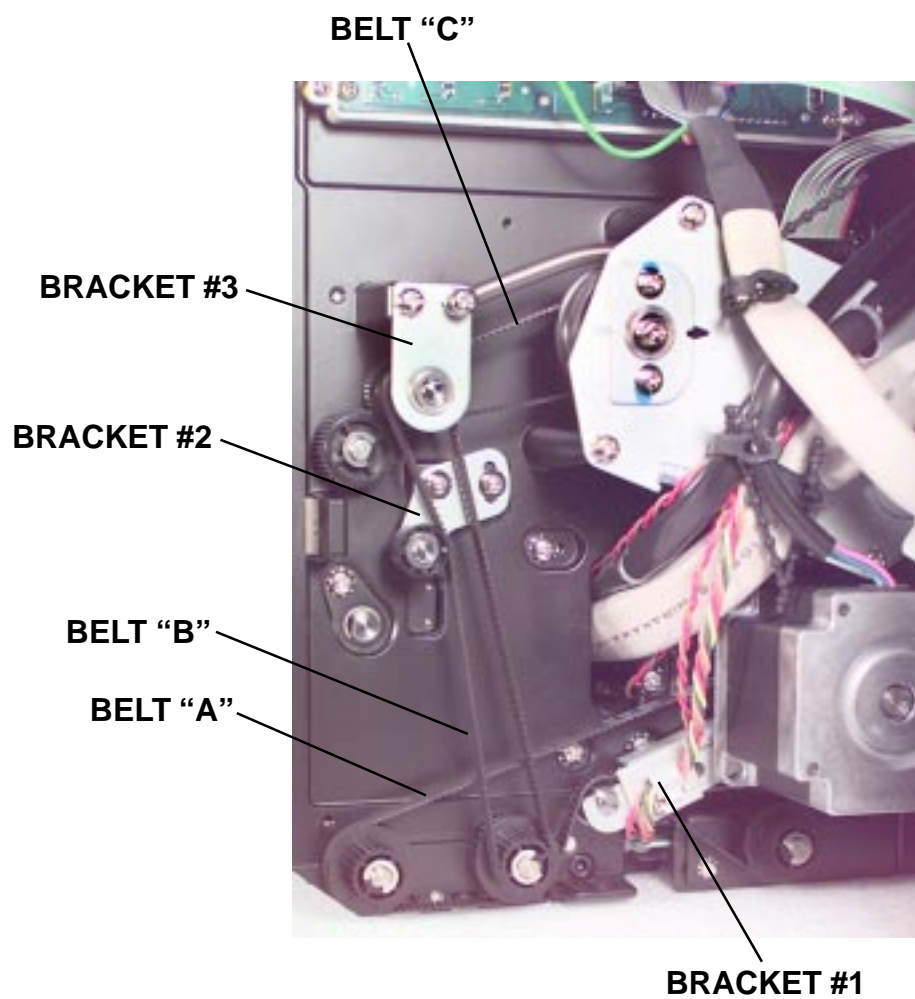
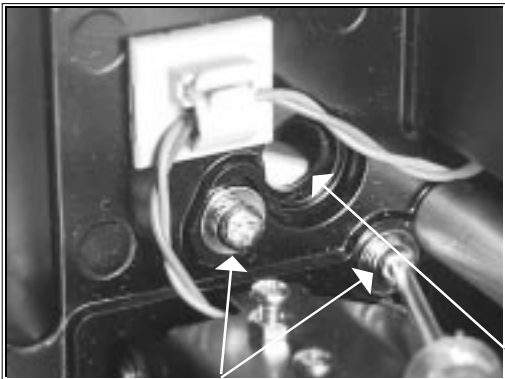
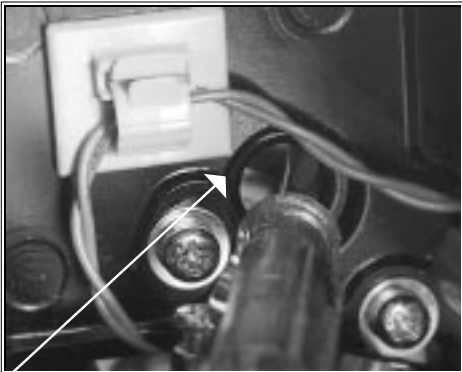


Fig. 5-12

Timing Belt Tension Adjustment



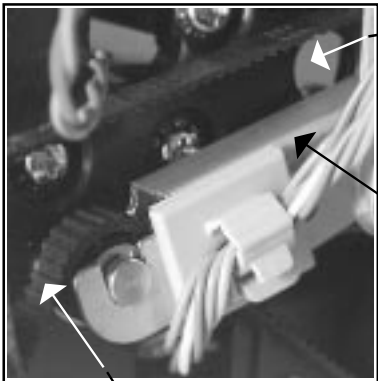
**(2) ADJUSTMENT
SCREWS FOR
BRACKET #1**



**ACCESS HOLE TO
ADJUST BRACKET #1
WITH SCREWDRIVER**

Figs. 5-15

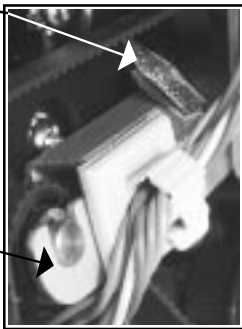
MEDIA SIDE



BELT "A"

**ACCESS HOLE TO
ADJUST BRACKET #1
WITH SCREWDRIVER
(OPPOSITE SIDE)**

BRACKET #1



Figs. 5-16

BELT SIDE

5.7 Feed Roller Adjustment (Label Tracking)

| | |
|---------------------|---|
| Required Equipment: | <ul style="list-style-type: none"> • 10mm Open End Wrench • #2 Phillips Screwdriver |
|---------------------|---|

Used for fine tuning. Adjusts pressure between upper and lower rollers.

| STEP | PROCEDURE |
|------|--|
| 1. | Load the ribbon and label stock into the printer. |
| 2. | <p>Loosen the set screw and turn the eccentric nut CW or CCW. Fig. 5-18</p> <p>Rotating CW moves the Feed Roller Assembly forward and labels will track towards the inside.</p> <p>Rotating CCW moves the Feed Roller Assembly backward and labels will track towards the outside.</p> <p>Tighten the (2) screws after adjusting.</p> |
| 3. | <p>To increase pressure between the upper and lower rollers, adjust the two screws on the media lid.</p> <p>Adjust the height of the screws to 5mm. Fig. 5-17</p> |

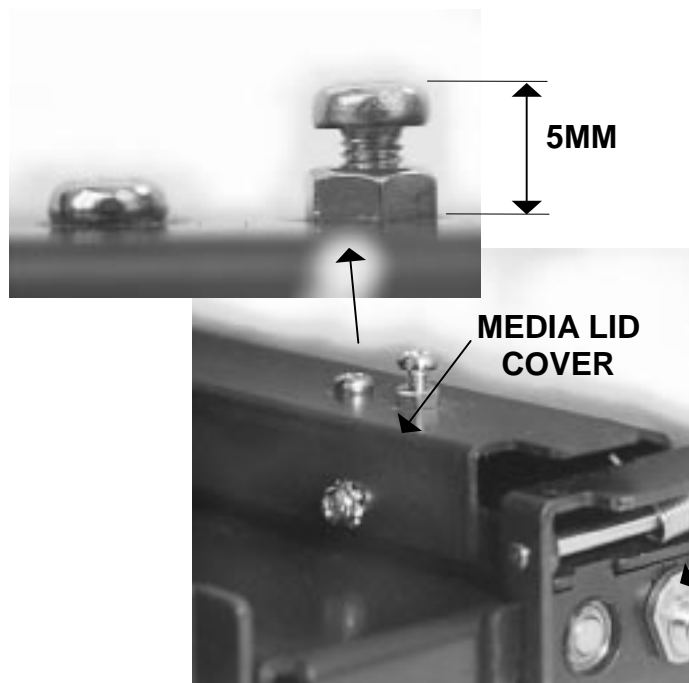


Fig. 5-17

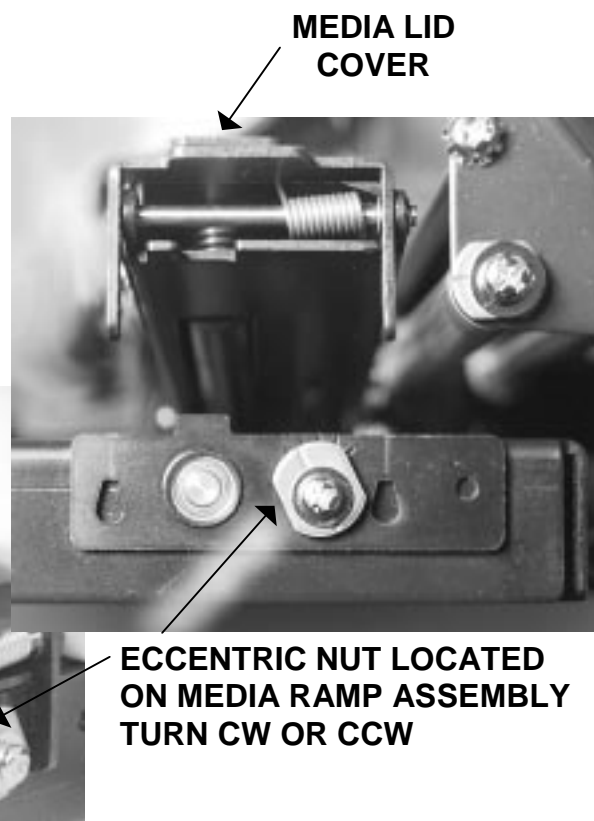


Fig. 5-18

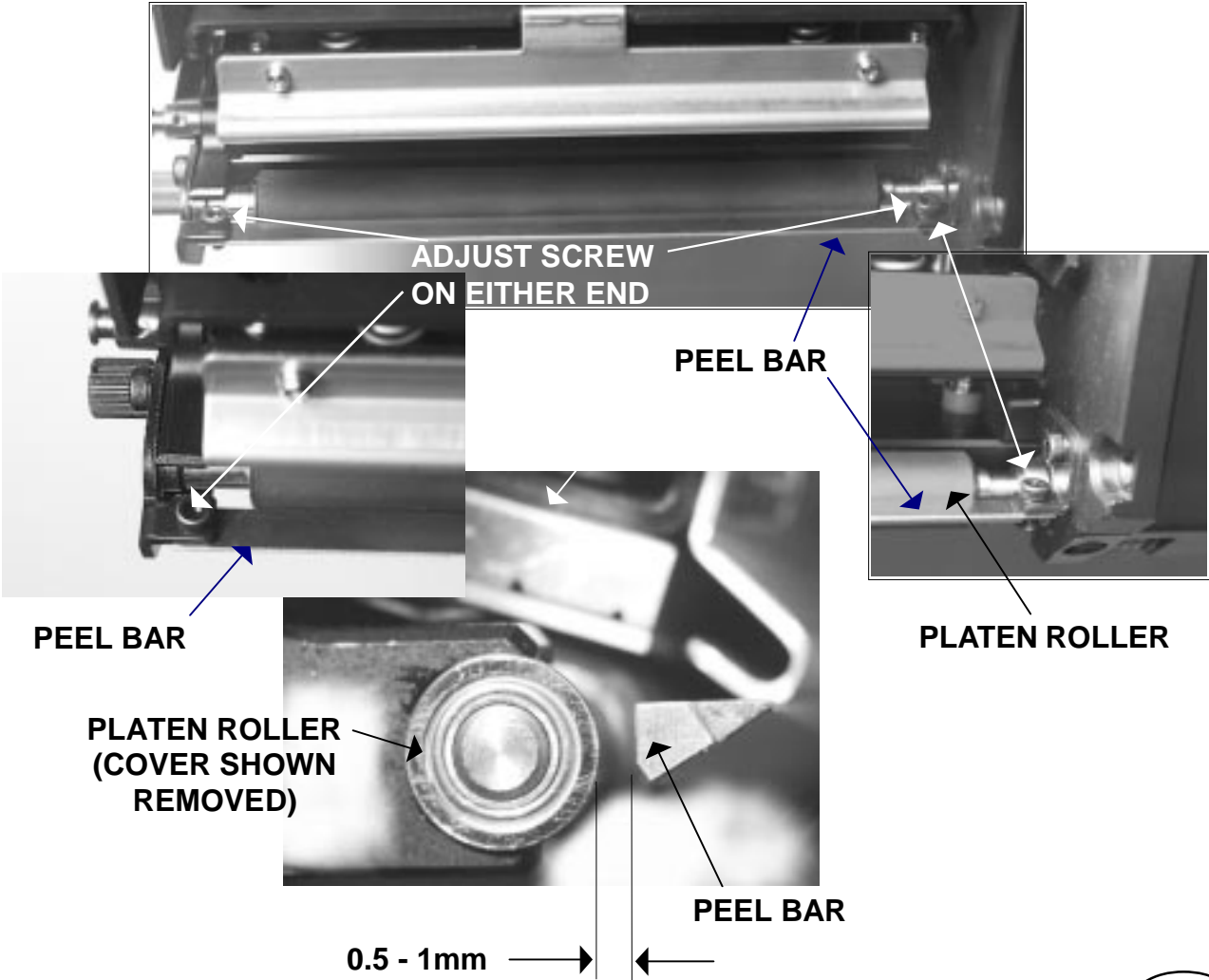
5.8 Peel Bar Adjustment

| | |
|---------------------|---|
| Required Equipment: | <ul style="list-style-type: none">• 5.5mm Open End Wrench• #2 Phillips Screwdriver |
|---------------------|---|

The distance between the dispense bar and the platen roller should be 0.5-1mm and equal on both the inside of the platen/peel bar and the outside of the peel bar.

To adjust perform the following.

| STEP | PROCEDURE |
|------|---|
| 1. | Loosen the set screw on either end of the peel bar and adjust to obtain an equal distance between the platen roller and the peel bar. <i>Figs. 5-19</i> |



Figs. 5-19

5.9 Ribbon Unwind/Rewind Shaft Adjustment

To adjust the Ribbon Unwind/Rewind Shaft tension perform the following steps:

| STEP | PROCEDURE |
|------|--|
| 1. | Check for even/smooth ribbon tension at the ribbon unwind spool as the ribbon travels downward past the print head. If it appears to be uneven, proceed to Step 3. |
| 2. | Check for even/smooth ribbon tension at the ribbon unwind spool as the ribbon travels upward from under the print head. If it appears to be uneven, proceed to Step 3. |
| | NOTE: Before attempting Step 3, be sure the Ribbon Guide Plate has first been adjusted (Section 5.3). |
| 3. | Loosen the set screws on the adjustment plate Fig. 5-20 . Insert a flat blade screwdriver into the adjustment slot and adjust for even/smooth ribbon tension at the ribbon unwind/rewind spool/shaft. |
| | NOTE: The ribbon unwind/rewind shafts should be parallel to each other and perpendicular to the base frame of the printer. The ribbon unwind/rewind shaft adjustment may affect the timing belt adjustment (Section 5-6). Readjust if required. |

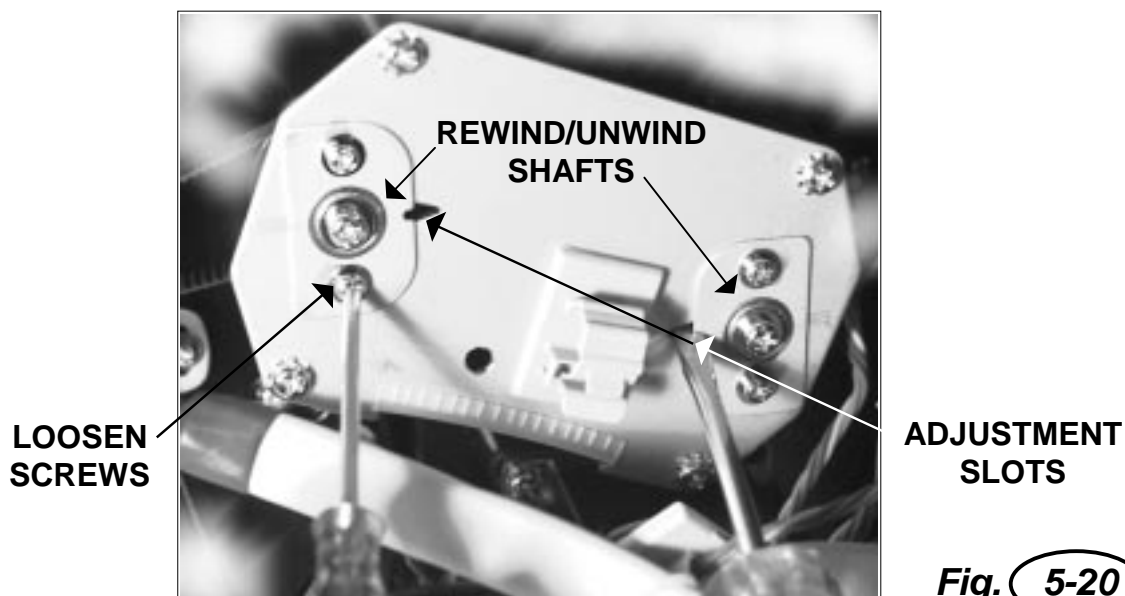


Fig. 5-20

Section 6

Replacement Procedures

6.1 Overview

The M-8485Se Printer Engines contain replacement components and sub-assemblies. This section contains step-by-step instructions for removing and replacing the following components and subassemblies.

- *Fuses*
- *Power Supply*
- *Main Circuit Board*
- *LCD Display Panel Label Sensor*
- *Dip Switch Panel*
- *Stepper Motor*
- *Timing Belts*
- *Ribbon Clutch Washers*
- *Ribbon Motion Sensor*
- *Cover Open Switch*
- *Head Open Switch*
- *Label Gap Sensors*
- *Label Out Sensor*
- *Platen*
- *Print Head*

6.2 Replacing Fuses

Fuse replacement is described in the following section.

- 6.2.1 Removing and replacing the Main Power Fuse
- 6.2.2 Removing and replacing the internal Fuse(s)

NOTE: Before replacing a fuse, determine the cause of the overload condition.

6.2.1 Removing and Replacing the Main Power Fuse

Required Equipment: F15 Amp, 250 V Fuse

| STEP | PROCEDURE |
|------|--|
| 1. | Switch the printer OFF and disconnect the power cable. |
| 2. | On the back of the printer locate the fuse cap. Unscrew the fuse cap and remove the defective fuse. Fig.6-1 |
| 3. | Replace the fuse with one of equal rating (F15 Amp, 250 V) and screw the fuse cap back. Do not use a fuse with a higher rating. |
| 4. | Reconnect the power cable. |

REAR COVER

FUSE



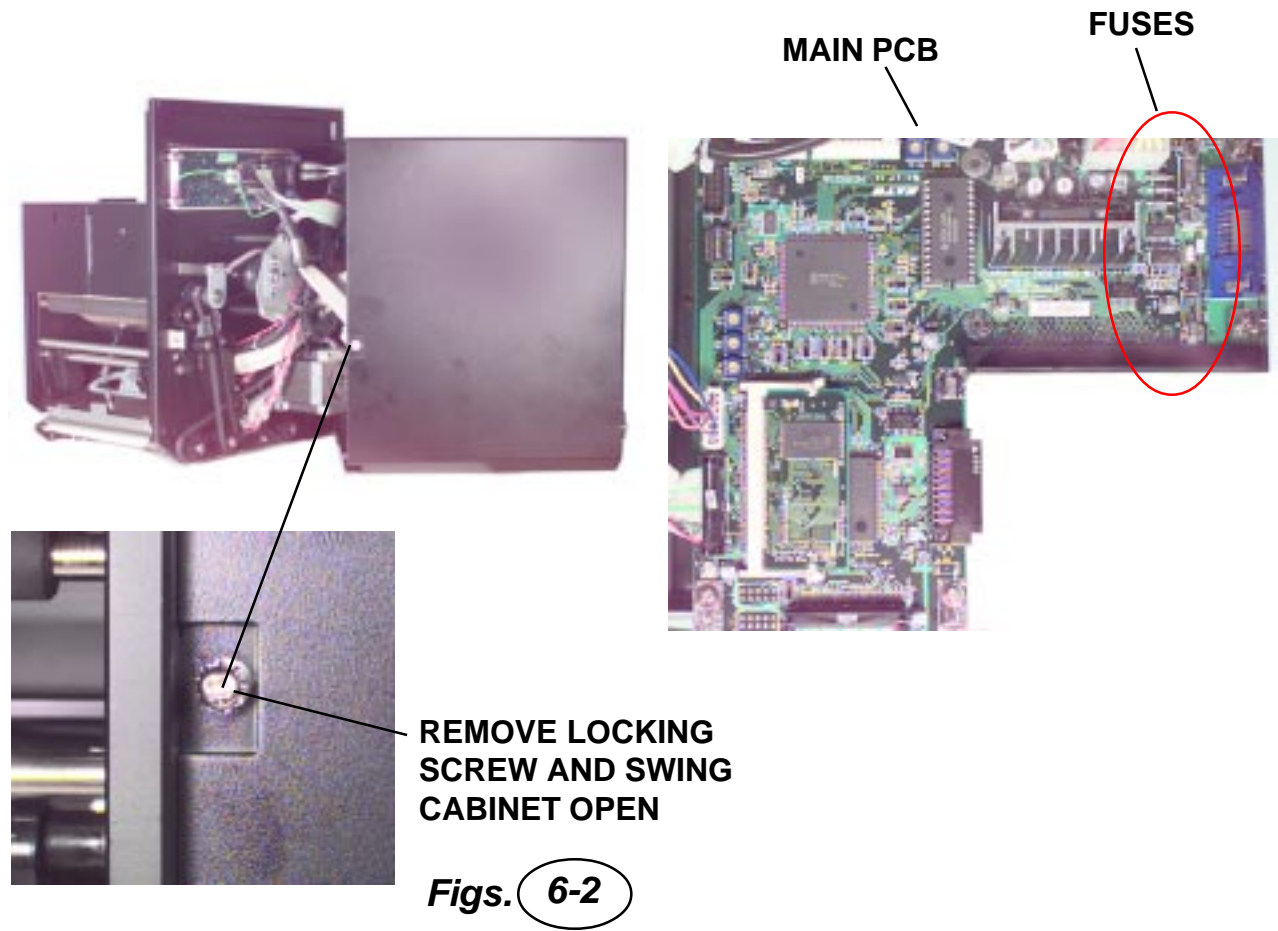
Fig. 6-1

Replacing Fuses

6.2.2 Removing and Replacing the Internal Fuse(s)

| | |
|-----------|---|
| Required: | T3.15 Amp, 250 V Fuse or T 1 Amp, 250 V Fuse |
|-----------|---|

| STEP | PROCEDURE |
|------|---|
| 1. | Switch the printer OFF and disconnect the power cable. |
| 2. | Remove locking screw from the side of the cabinet to allow the printer to swing open for access to the fuse(s) Fig.6-2 |
| 3. | Replace the defective fuse with one of equal rating. Do not use a fuse with a higher rating. |
| 4. | Close the printer sections and replace the locking screw. |
| 5. | Reconnect the power cable. |

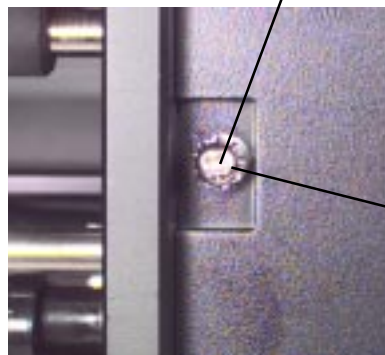


6.3 Replacing the Power Supply

The Power Supply is a non-repairable component with no service parts and is replaced as a complete assembly.

To remove and replace the Power Supply, perform the following steps:

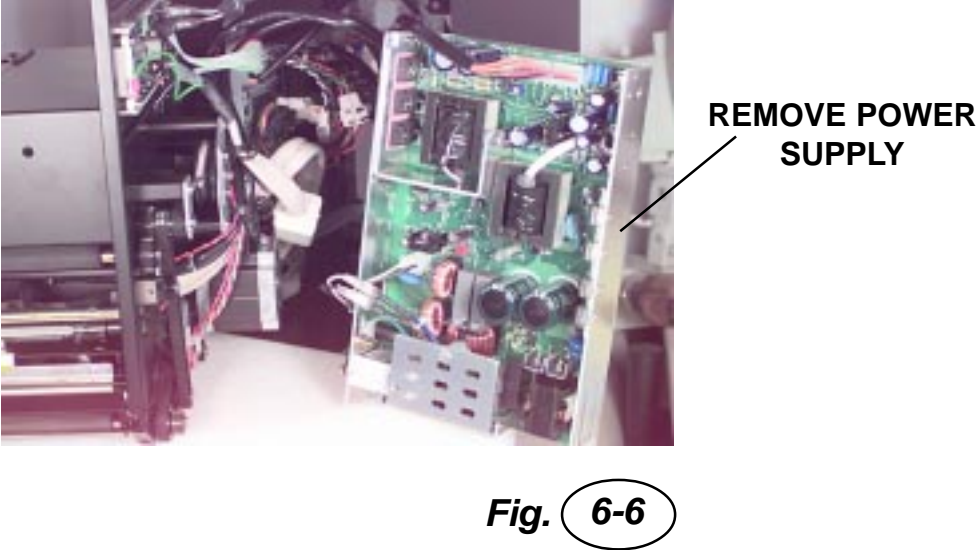
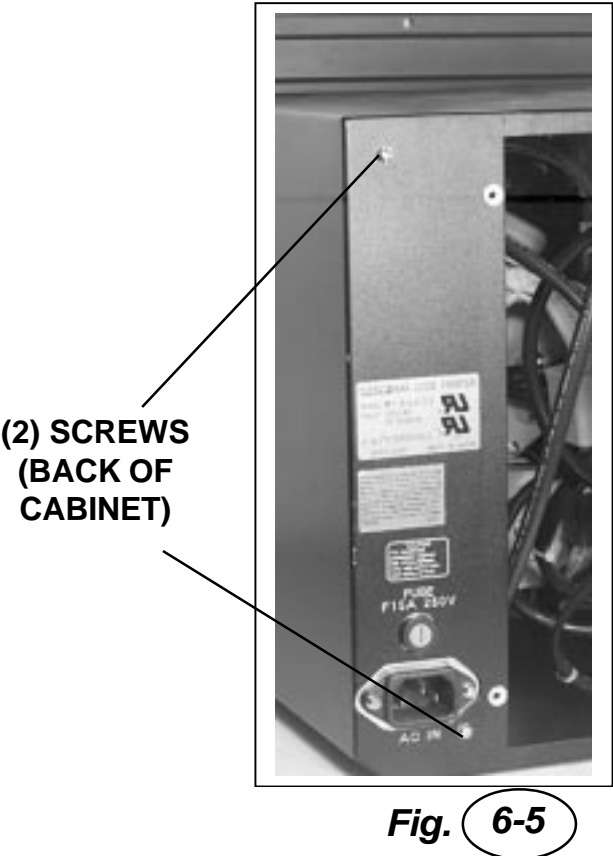
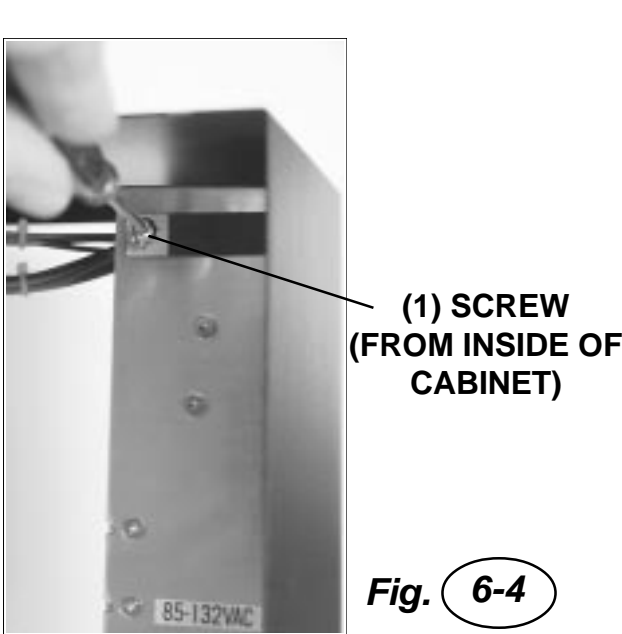
| STEP | PROCEDURE |
|------|--|
| 1. | Switch the printer OFF and disconnect the power cable. |
| 2. | Remove locking screw from the side of the cabinet to allow the printer to swing open for access to the fuse(s) Fig.6-3 |
| 3. | Remove (2) screws holding the power supply to the back of the cabinet and (1) screw from inside the cabinet. Fig. 6-4 & 6-5 |
| 4. | Remove the defective power supply. Fig. 6-6 |
| 5. | Detach (5) connectors from the power supply. Figs. 6-7 |
| 6. | Install a new power supply. |
| 7. | Reattach connections and screws previously removed. |
| 8. | Close the printer sections and replace the locking screw. |
| 9. | Reconnect the power cable. |



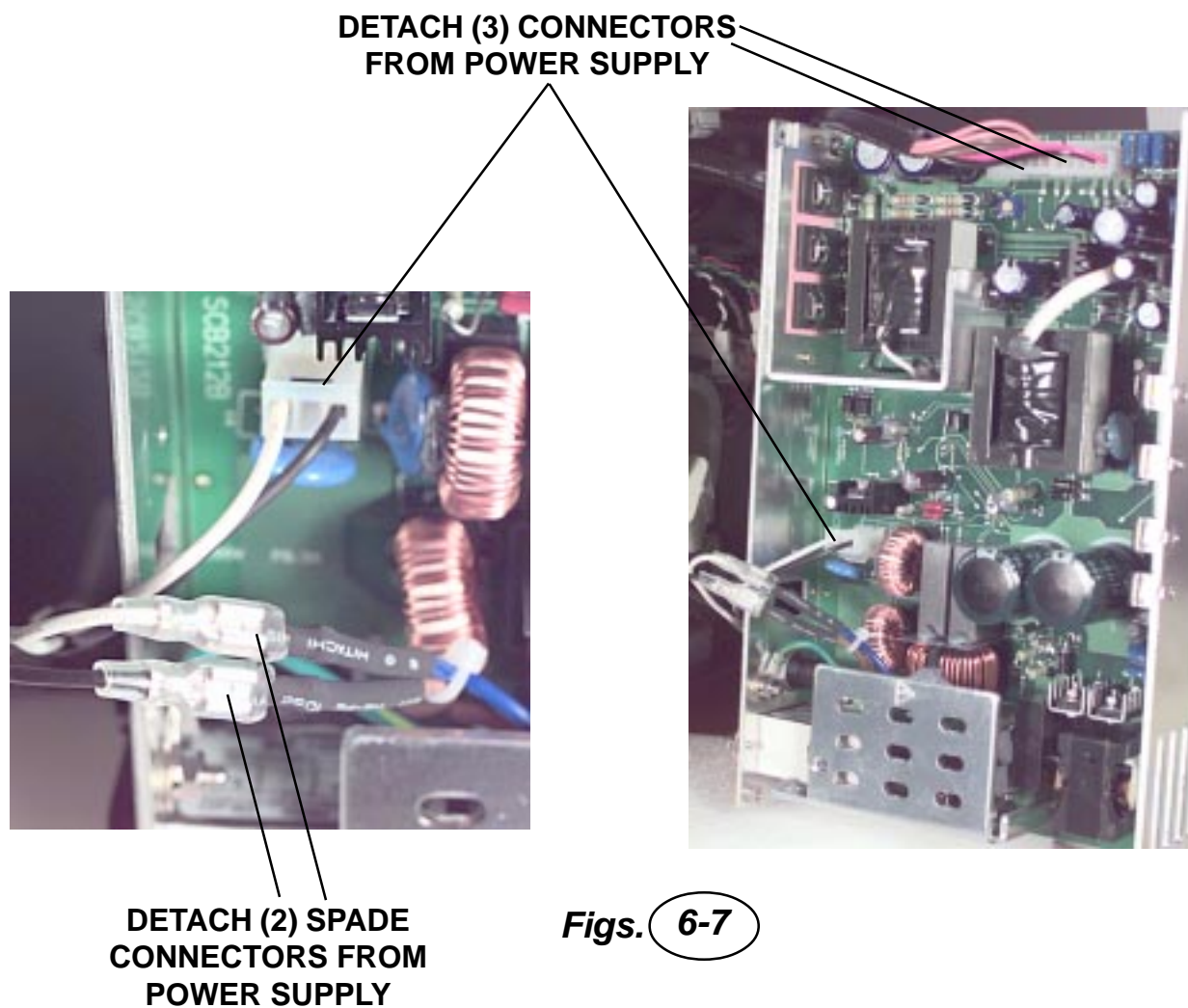
**REMOVE LOCKING
SCREW AND SWING
CABINET OPEN**

Figs. 6-3

Replacing the Power Supply



Replacing the Power Supply



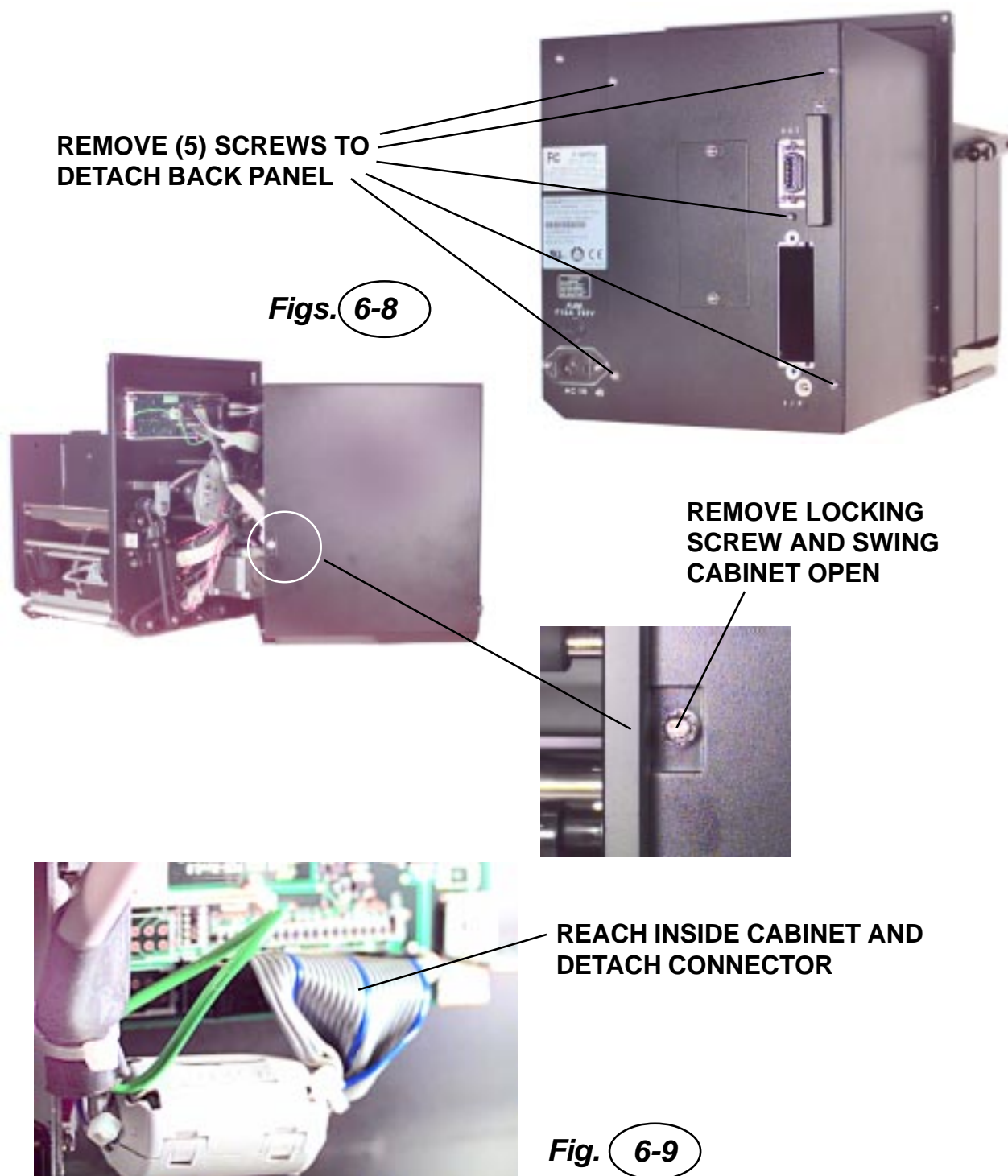
6.4 Replacing the Main Circuit Board

NOTE: Many of the components on this board are susceptible to damage by static electricity. To avoid damage from static electricity, do not unpack new circuit boards from anti-static bags until instructed to do so and use a wrist grounding strap.

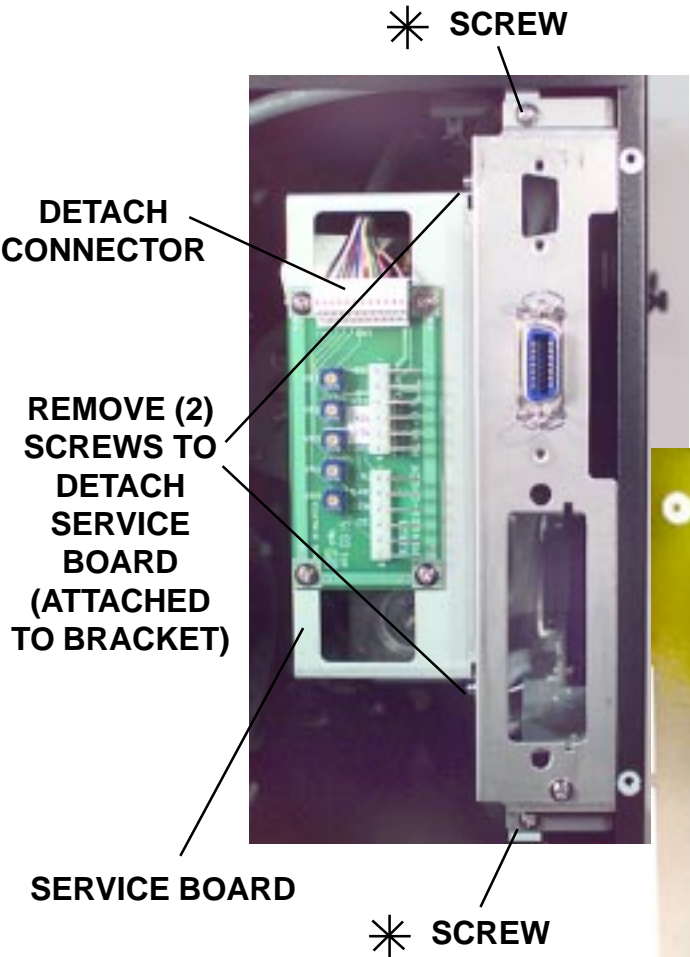
| STEP | PROCEDURE |
|------|--|
| 1. | Switch the printer OFF and disconnect the power cable. |
| 2. | Remove (5) screws securing the back panel to the cabinet. Figs. 6-8 |
| 3. | Remove screw from cabinet side to allow printer halves to swing open for access to the inside of the printer. Figs. 6-8 |
| 4. | Reach inside cabinet and detach connector. Fig. 6-9 |
| 5. | From the back of the printer (Back Panel has been removed) remove (4) screws as shown in Figs. 6-10 . Pull the PCB board (still attached to the frame) out the back of the printer. |
| 6. | Remove (2) screws holding the Service Board and bracket to the main PCB. Detach the connector. Set aside for reassembly to the replacement PCB. Figs. 6-10 |
| 7. | Note cable connections locations, then disconnect all cables from the PCB board. Figs. 6-11 |
| 8. | Remove (2) screws from EXT Connector. Figs. 6-12 |
| 9. | Remove (3) screws to detach PCB board from the frame. Remove the board from the printer. Figs. 6-12 |
| 10. | Locate the Flash Memory Module on the Main PCB Board. Figs. 6-11 Carefully press outward on the tabs on both ends of the Main PCB Board Memory Frame to release the Memory Module PCB. The module should lift by itself when released. Remove the module from the frame. Note the indexing notches. Figs. 6-13 Set the Memory Module PCB aside for installing on the replacement Main PCB. |
| 11. | Install the Memory Module on the replacement Main PCB. Note the indexing notches. Insert the module into the Main PCB Memory Frame at approximately 45° away from the Main PCB Board. Gently push down to snap into position. Figs. 6-14 |

Replacing the Main Circuit Board

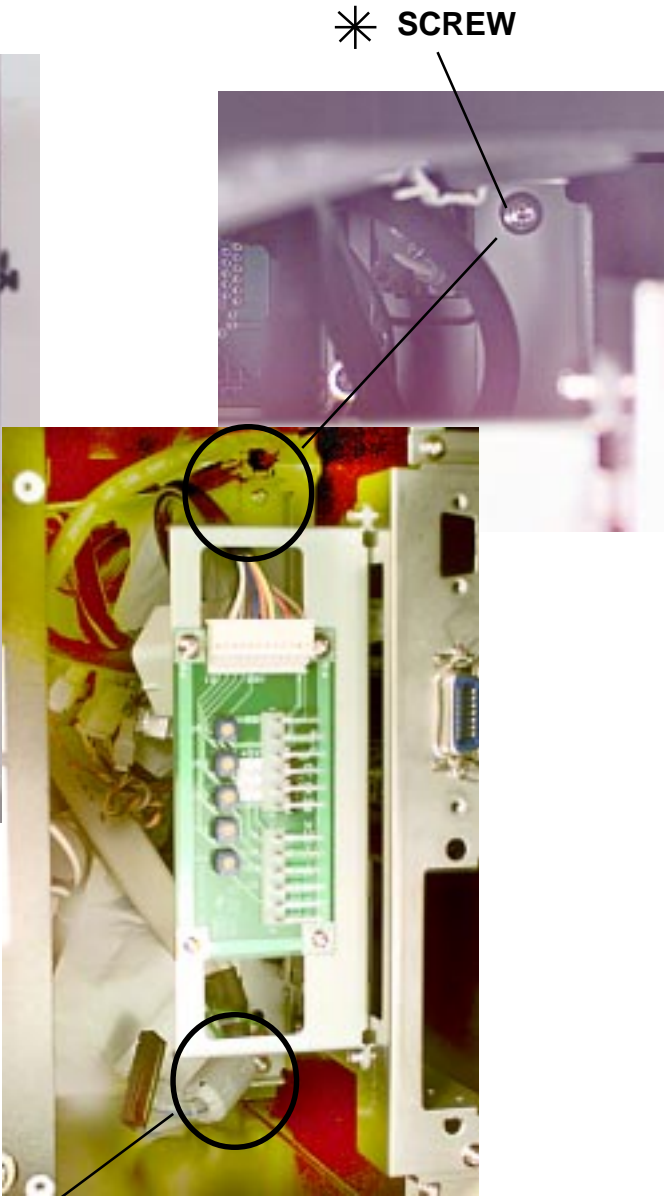
| STEP | PROCEDURE |
|------|--|
| 11. | Make sure DIP Switches and jumpers are set correctly and POTS are turned to 12:00 (middle of range) before installing PCB. |
| 12. | Reinstall replacement PCB reversing steps 1 through 9. |
| 13. | Complete the Factory Reset Procedure. |



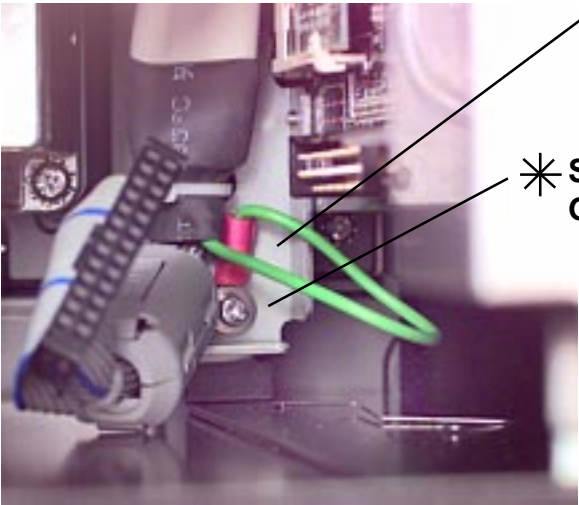
Replacing the Main Circuit Board



Figs. 6-10

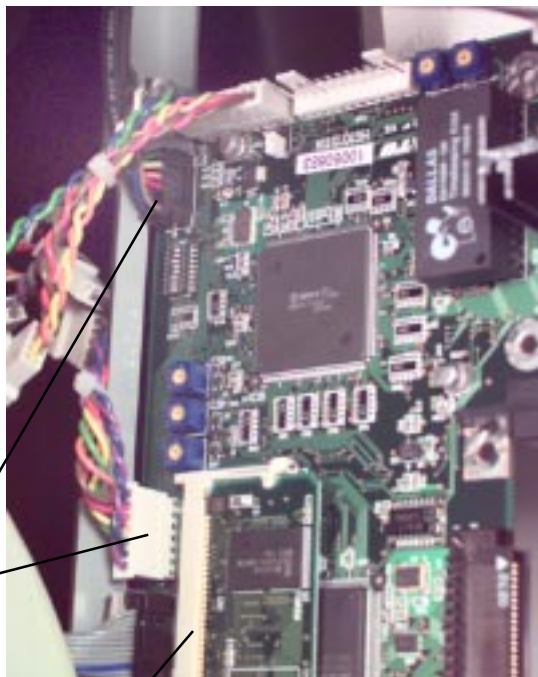
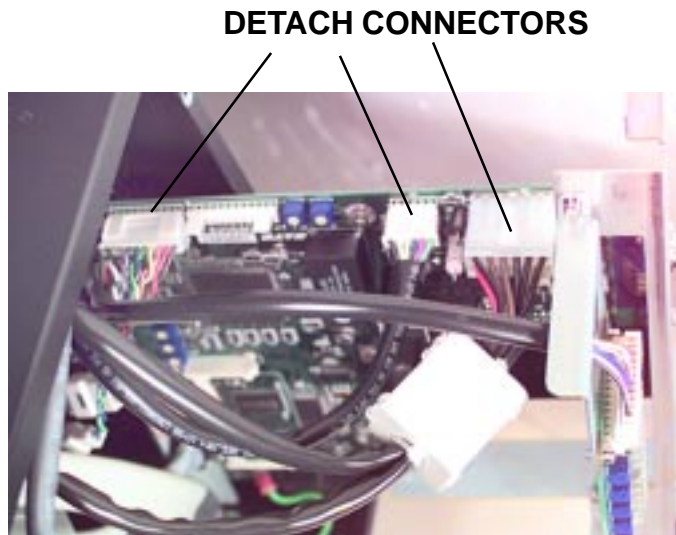


*** = REMOVE (4) SCREWS**



**VIEWS ARE INSIDE OF PRINTER
AFTER BACK PANEL HAS BEEN
REMOVED**

Replacing the Main Circuit Board

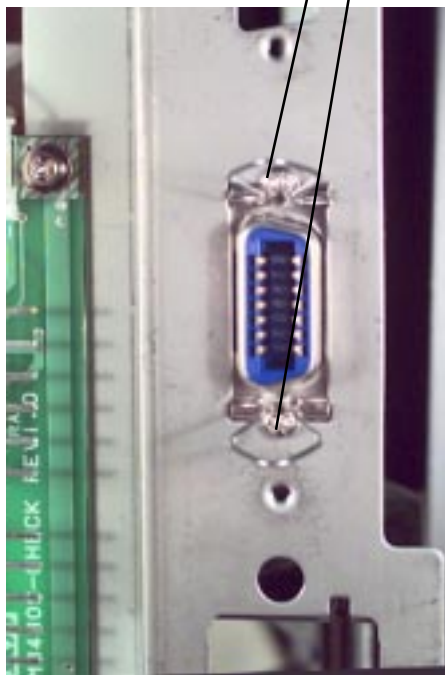


DETACH CONNECTORS

Figs. 6-11

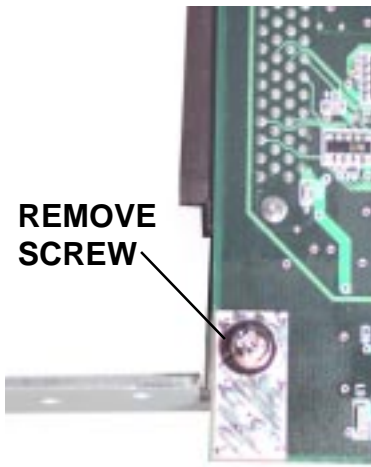
FLASH CARD
MEMORY MODULE

REMOVE (2) SCREWS
FROM EXT CONNECTOR



Figs. 6-12

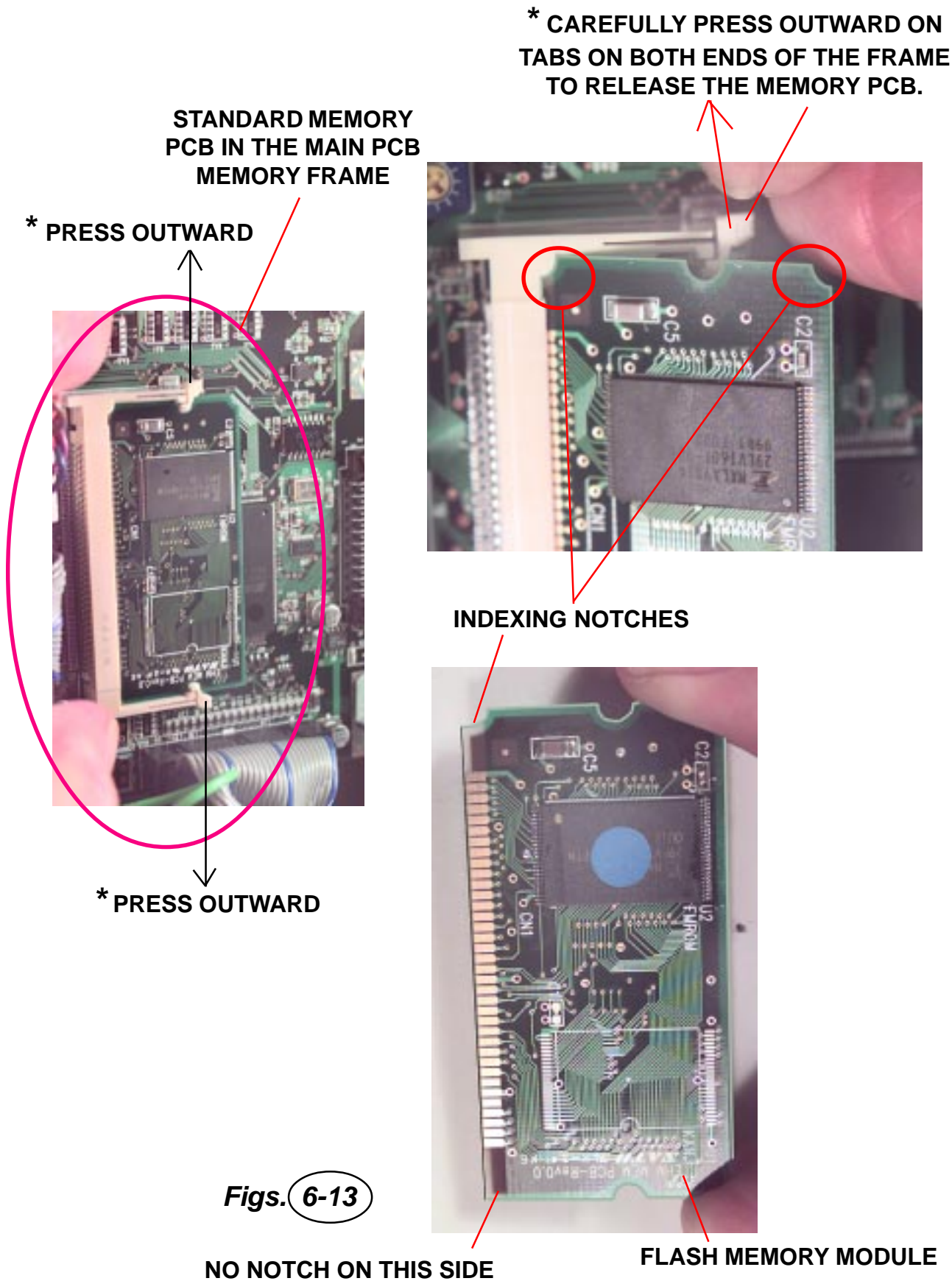
REMOVE
SCREW



REMOVE
(2) SCREWS

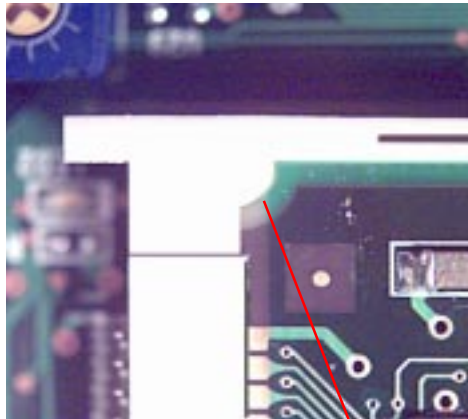


Replacing the Main Circuit Board

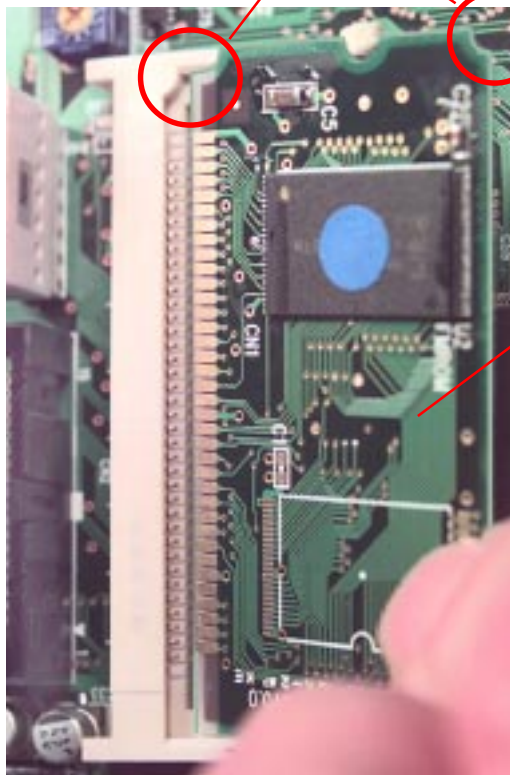


Figs. 6-13

Replacing the Main Circuit Board



INDEXING NOTCHES



**APPROXIMATELY
45° ANGLE**

**INSERT THE FLASH MEMORY
MODULE INTO THE MAIN PCB
MEMORY FRAME AT
APPROXIMATELY 45°. NOTE THE
INDEXING NOTCH ON THE
MODULE. GENTLY PUSH DOWN TO
SNAP INTO POSITION**

Figs. 6-14

6.5 Replacing the Service Board

NOTE: Many of the components on this board are susceptible to damage by static electricity. To avoid damage from static electricity, do not unpack new circuit boards from anti-static bags until instructed to do so and use a wrist grounding strap.

| STEP | PROCEDURE |
|------|--|
| 1. | Switch the printer OFF and disconnect the power cable. |
| 2. | Remove (5) screws securing the back panel to the cabinet. Fig. 6-15 |
| 3. | Detach the connector from the Service Board. Fig. 6-16 |
| 4. | Remove (4) screws to detach defective service board from bracket. |
| 5. | Reinstall replacement service board reversing the above steps. |

REMOVE (5) SCREWS TO
DETACH BACK PANEL



Fig. 6-15

DETACH
CONNECTOR

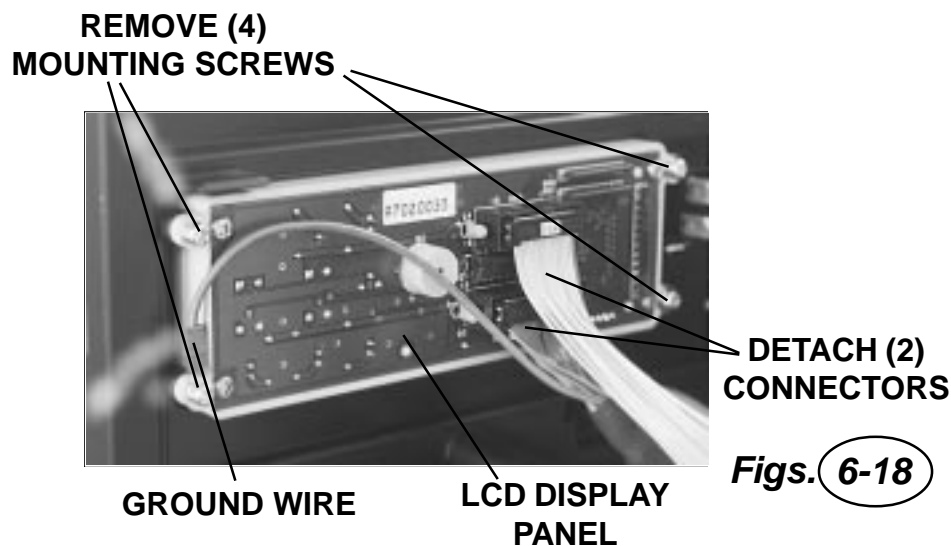
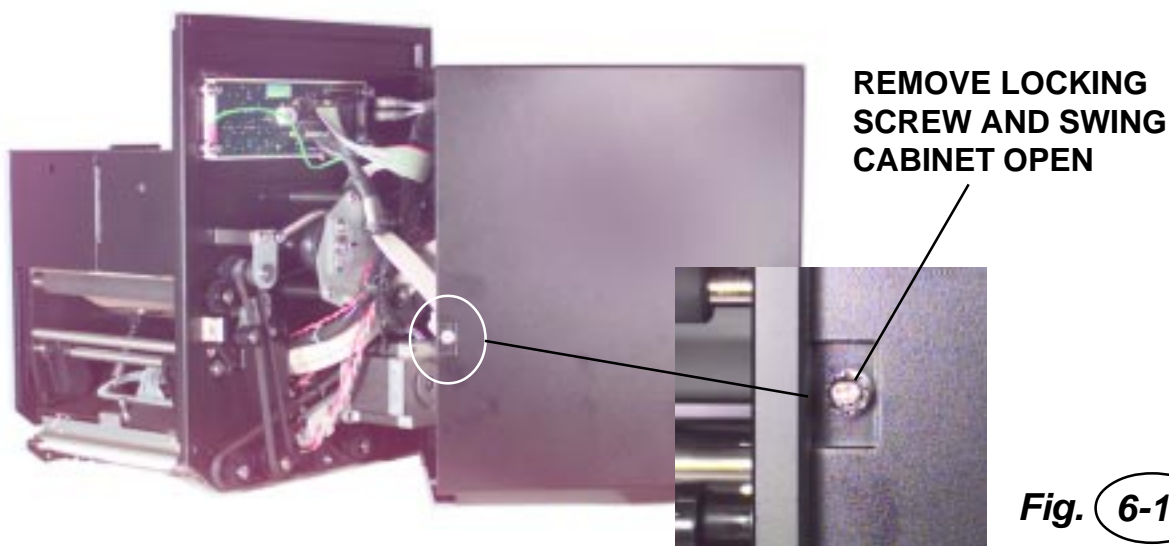


REMOVE (4)
SCREWS TO DETACH
SERVICE BOARD

Figs. 6-16

6.6 Replacing the LCD Display Panel

| STEP | PROCEDURE |
|------|--|
| 1. | Switch the printer OFF and disconnect the power cable. |
| 2. | Remove screw from cabinet side to allow printer halves to swing open for access to the inside of the printer. Fig. 6-17 |
| 3. | Detach (2) connectors from the display panel PCB. |
| 4. | Remove (4) panel mounting screws. Note that one screw secures a ground wire. Note location for reassembly. Fig. 6-18 |
| 5. | Remove and replace the LCD Display Panel. Reattach the connectors. |
| 6. | Close the printer halves and replace the locking screw. |
| 7. | Reconnect the power cable. |



6.7 Replacing the Dip Switch Panel

| STEP | PROCEDURE |
|------|--|
| 1. | Switch the printer OFF and disconnect the power cable. |
| 2. | Raise the lid on the mechanical side of the printer. |
| 3. | Snap off the cover from the Dip Switch Panel. Insert a probe such as a narrow blade screwdriver into the slots for ease in removing the cover. Fig. 6-19 |
| 4. | Remove (2) screws holding the panel to the cabinet. Fig. 6-20 |
| 5. | Detach the cable connection from the panel. Fig. 6-21 |
| 6. | Remove and replace the Dip Switch Panel. Reattach the cable. |
| 7. | Reconnect the power cable. |

INSERT A NARROW PROBE
INTO COVER SLOTS FOR
EASE IN REMOVAL



Fig. 6-19

REMOVE (2) SCREWS

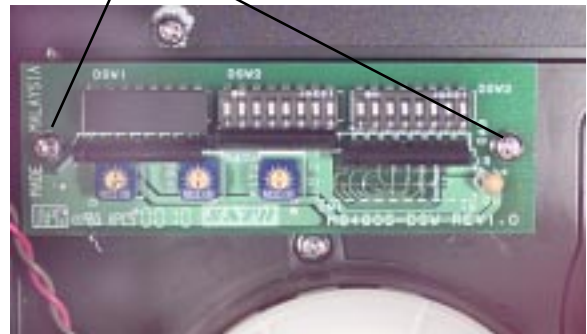


Fig. 6-20

DETACH CONNECTION

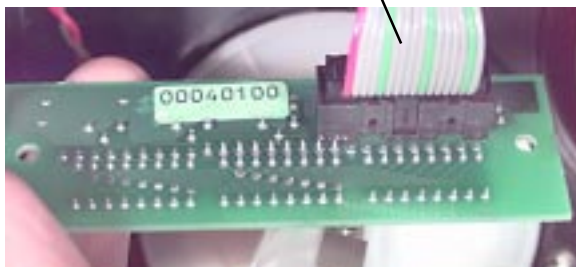
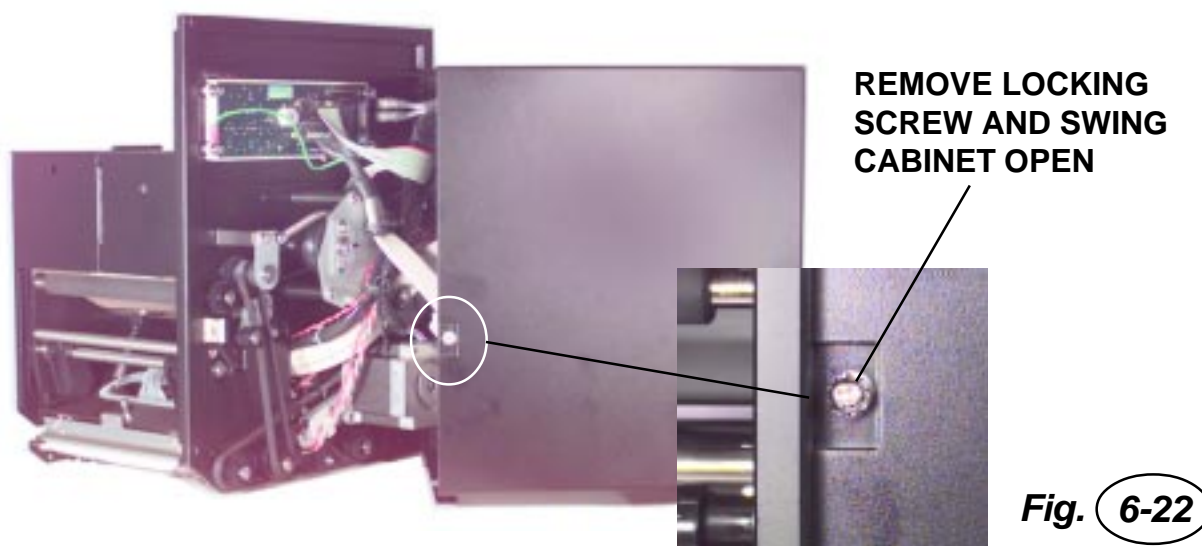


Fig. 6-21

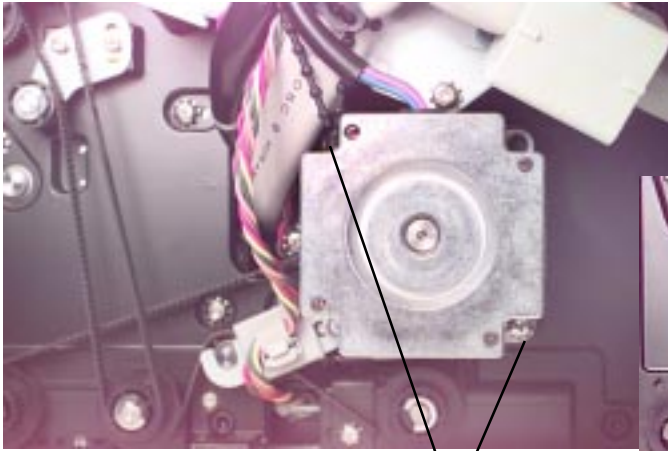
6.8 Replacing the Stepper Motor

The stepper motor is used to transmit motion to the print mechanism for precise print positioning. The stepper motor transmits torque to the label feed roller, the platen roller, the ribbon feed roller, and the ribbon rewind spindle via a series of toothed pulleys and timing belts.

| STEP | PROCEDURE |
|------|--|
| 1. | Switch the printer OFF and disconnect the power cable. |
| 2. | Remove screw from cabinet side to allow printer halves to swing open for access to the inside of the printer. Fig. 6-22 |
| 3. | Remove (2) mounting screws attaching the stepper motor to the frame. Remove motor to dislodge pulley from belt. Figs. 6-23 |
| 4. | Detach the cable from the cable holder. Disconnect the cable connector from the main PCB and remove the motor. Fig. 6-24 & 6-25 |
| 5. | Replace the motor with gear installed and remount to the frame. Reconnect the cable connector to the PCB and reattach the cable to the cable holder. |
| 6. | Adjust belt tension as outlined in Section 5.6. |
| 7. | Close the printer halves and replace the locking screw. |
| 8. | Reconnect the power cable. |



Replacing the Stepper Motor



**REMOVE (2) MOTOR
MOUNTING SCREWS**



Figs. 6-23



**DETACH CABLE FROM
CABLE HOLDER**

Fig. 6-24

**DISCONNECT THE
CABLE CONNECTOR
FROM THE MAIN PCB
BOARD**

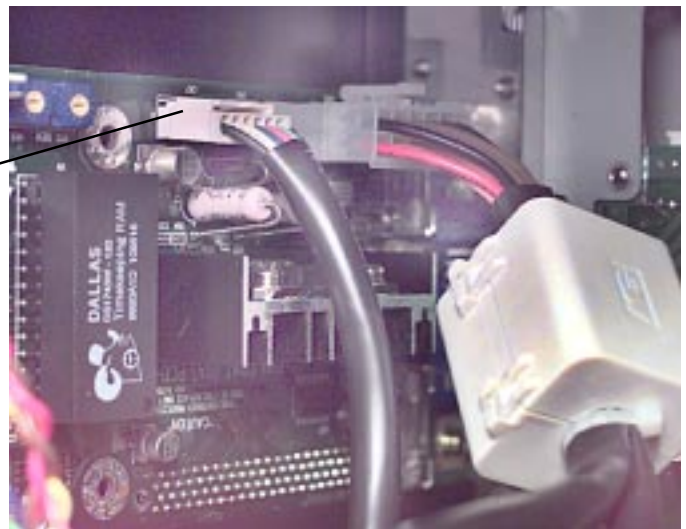


Fig. 6-25

6.9 Replacing the Timing Belts

Three timing belts used in this printer are arranged as follows:

Starting at the stepper motor:

Belt "A" - From the motor to front and rear platen rollers to idler pulley "A" to feed roller and back to motor. **Fig. 6-26 & 6-27**

Belt "B & C" - From rear platen roller to three level idler gear "B". The first level of idler gear "B" meshes with ribbon roller gear. The second level of idler gear "B" is connected to the rear platen. The third level of idler gear "B" is connected to the rewind spindle via Belt "C" **Fig. 6-28 & 6-29**

Idler pulley "C" is used for adjusting tension on belt.

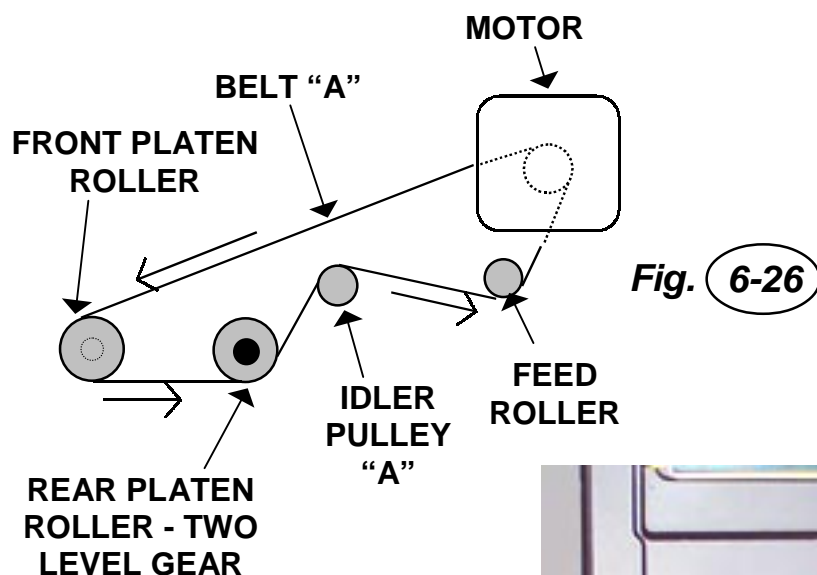


Fig. 6-26

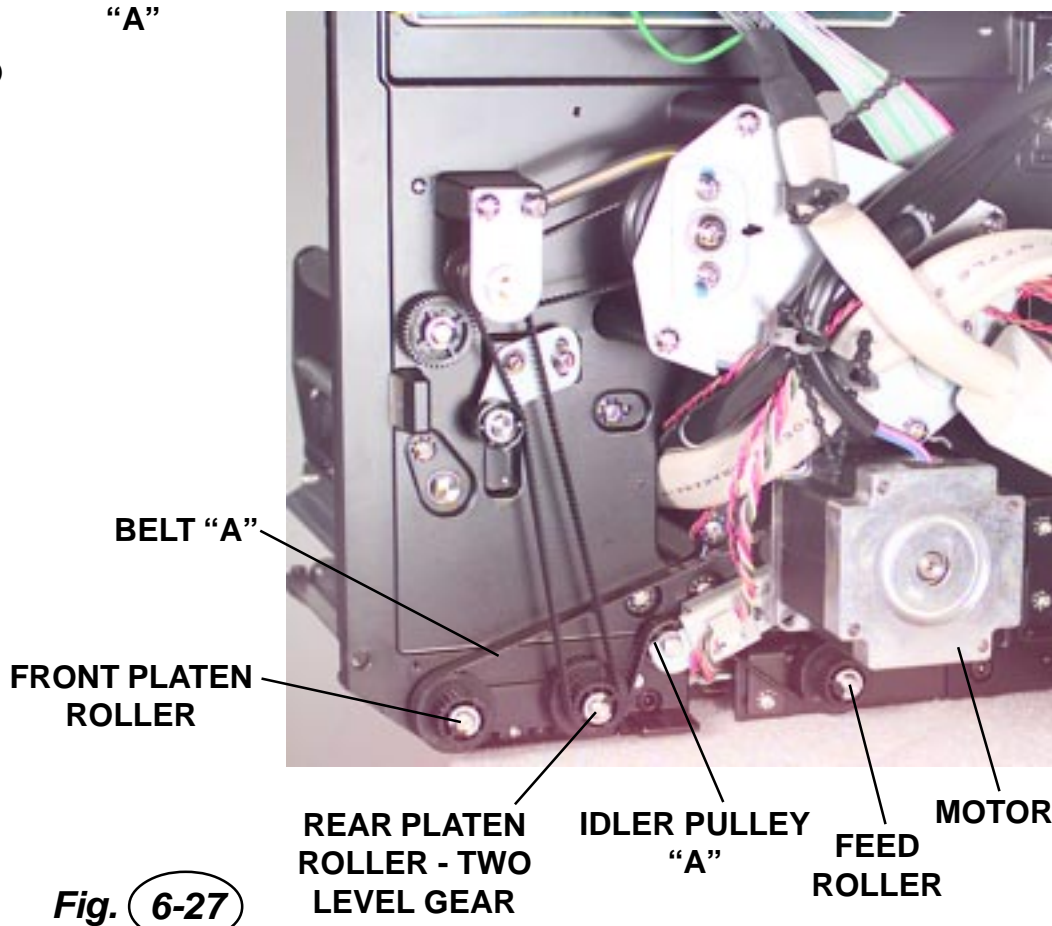


Fig. 6-27

Replacing the Timing Belts

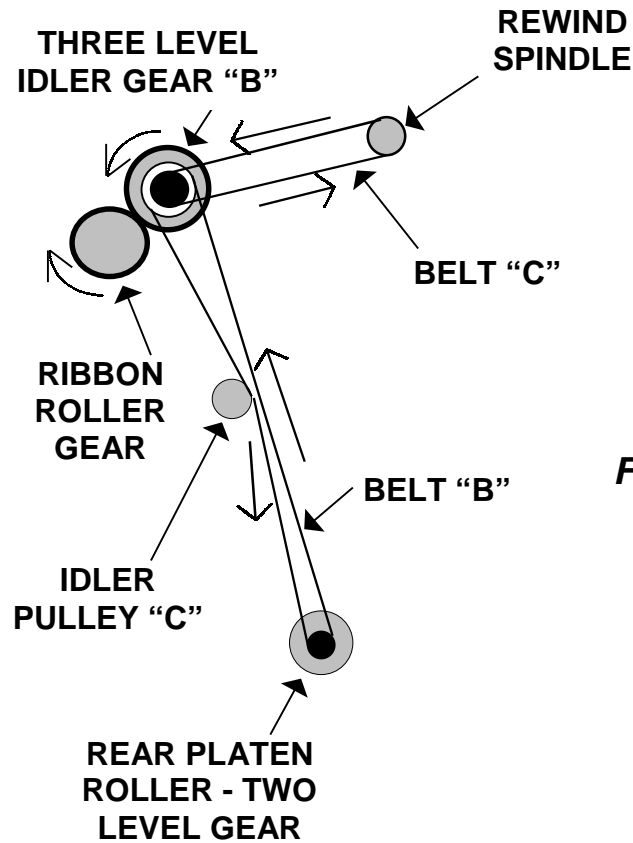


Fig. 6-28

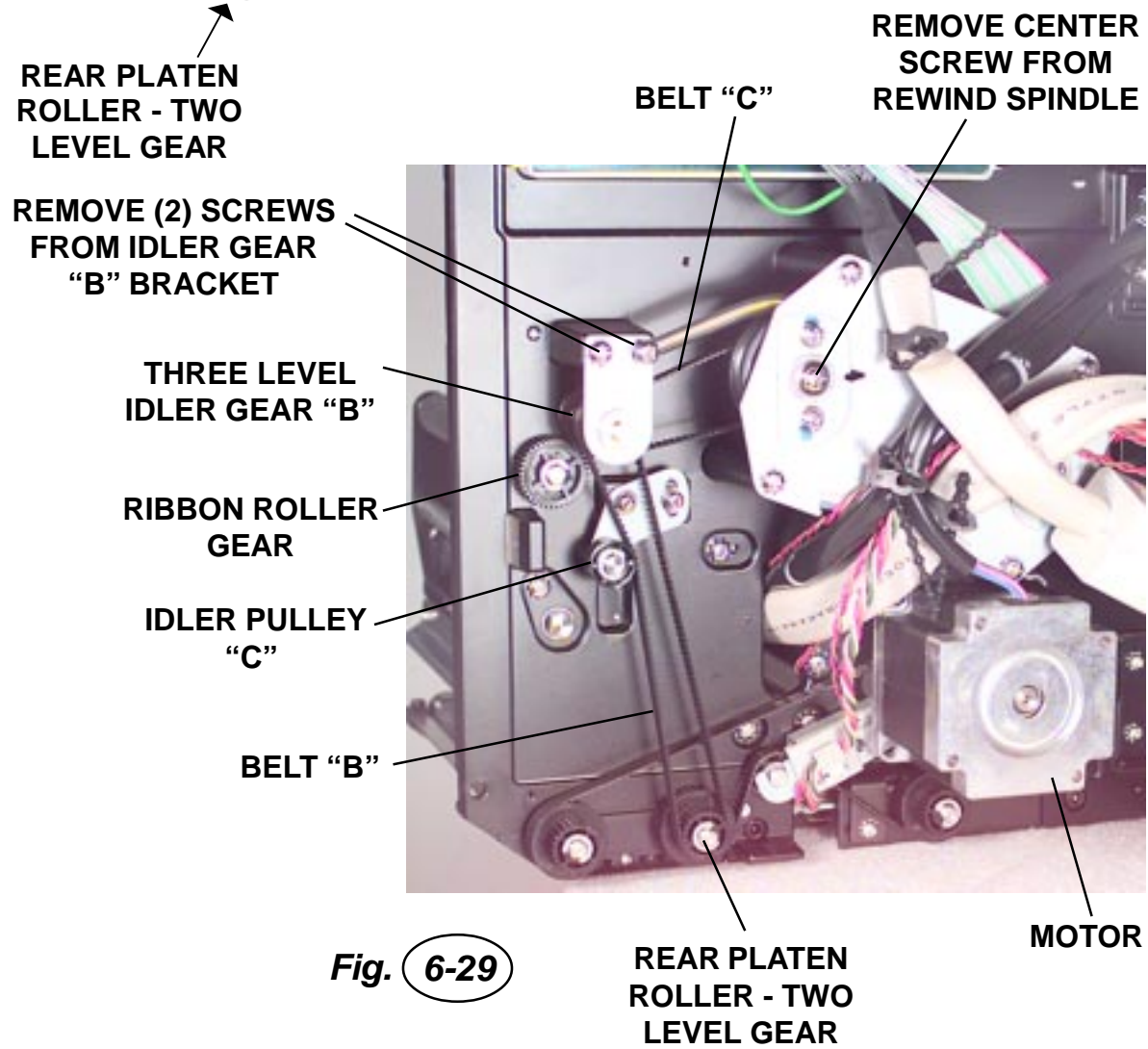
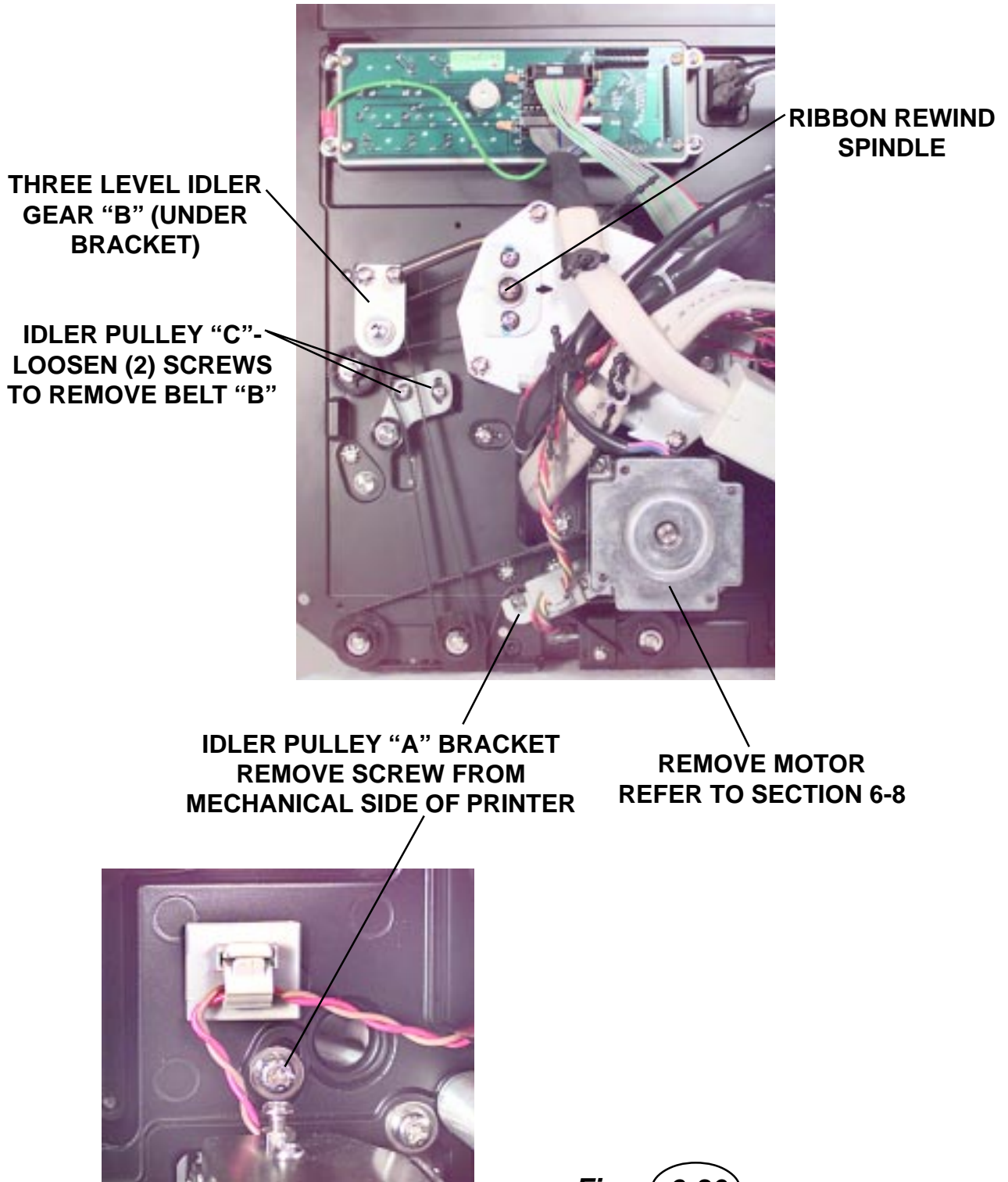


Fig. 6-29

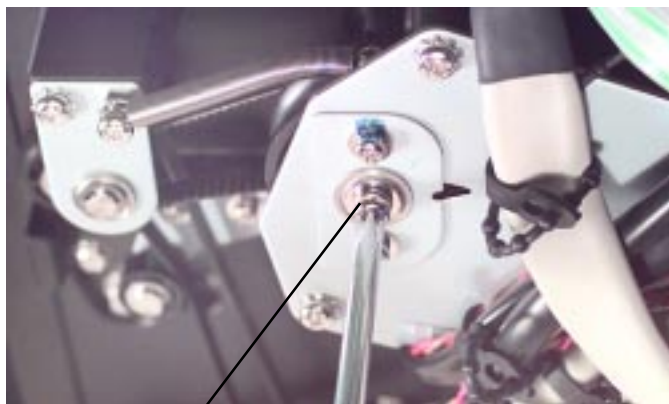
Replacing the Timing Belts

| STEP | PROCEDURE |
|------|---|
| 1. | Refer to Section 6.8 and perform Steps 1-3 to remove and dislodge the motor from the frame and from belt "A". Do not detach wire connections from the motor. Belts "C", "B" and "A" are removed in sequence. |
| 2. | Refer to all Figs. in this section before replacing belts. Remove (2) screws from idler gear "B" bracket and the center screw holding the ribbon rewind spindle. Use wrench on opposite end of shaft (in the mechanical section) to prevent the shaft from slipping. Pull shaft back towards the mechanical section, just enough so that belt "C" slides off the end of the shaft. Remove belt "C" from both pulleys. |
| 3. | Loosen (2) screws from idler pulley "C". Remove belt "B" from both pulleys. |
| 4. | From the mechanical section, remove holding idler pulley "A" mounting bracket screw. Detach the bracket and maneuver belt "A" from pulleys and the gears. Replace belts as required. Replace screws previously removed. Secure wire bundle in clamp. |
| 5. | Refer to Section 6-8 and remount the motor and attaching hardware to the frame. |
| 6. | Adjust belt tension as outlined in Section 5.6. |
| 7. | Close the printer halves and replace the locking screw. |
| 8. | Reconnect the power cable. |

Replacing the Timing Belts



Replacing the Timing Belts

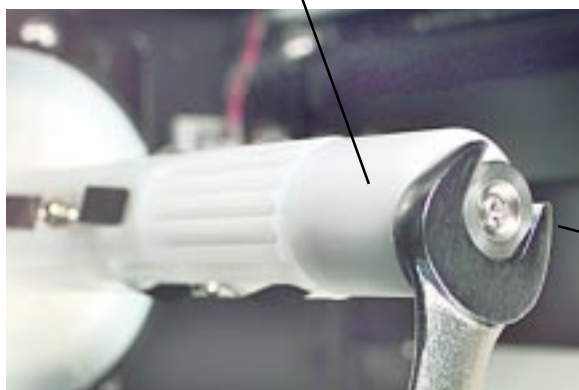


**REMOVE CENTER
SCREW**



**REMOVE (2) SCREWS
FROM IDLER GEAR
BRACKET "B"**

**RIBBON REWIND
SPINDLE**



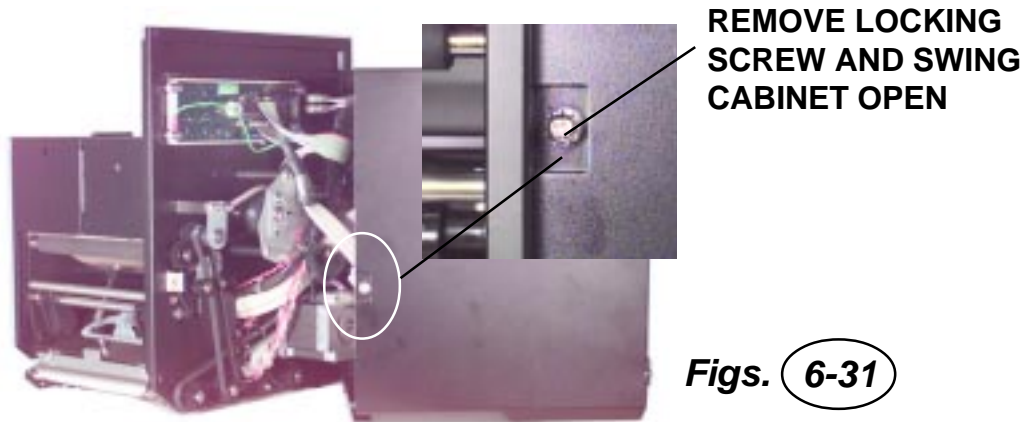
**USE WRENCH TO
PREVENT SHAFT FROM
SLIPPING WHEN
REMOVING BELT "C"**

***Figs.* 6-31**

6.10 Replacing the Ribbon Drive Clutch Washers

Both the ribbon unwind and the rewind drive spindles incorporate a friction clutch assembly to control tension. The friction washers within these clutch assemblies are replaceable. The procedure is identical for both the unwind and rewind spindles. To disassemble, perform the following steps:

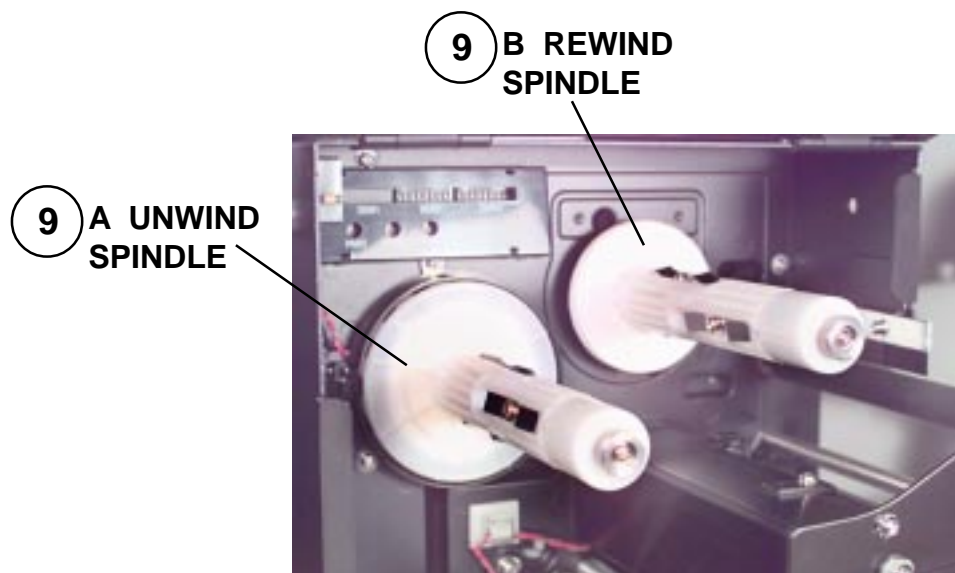
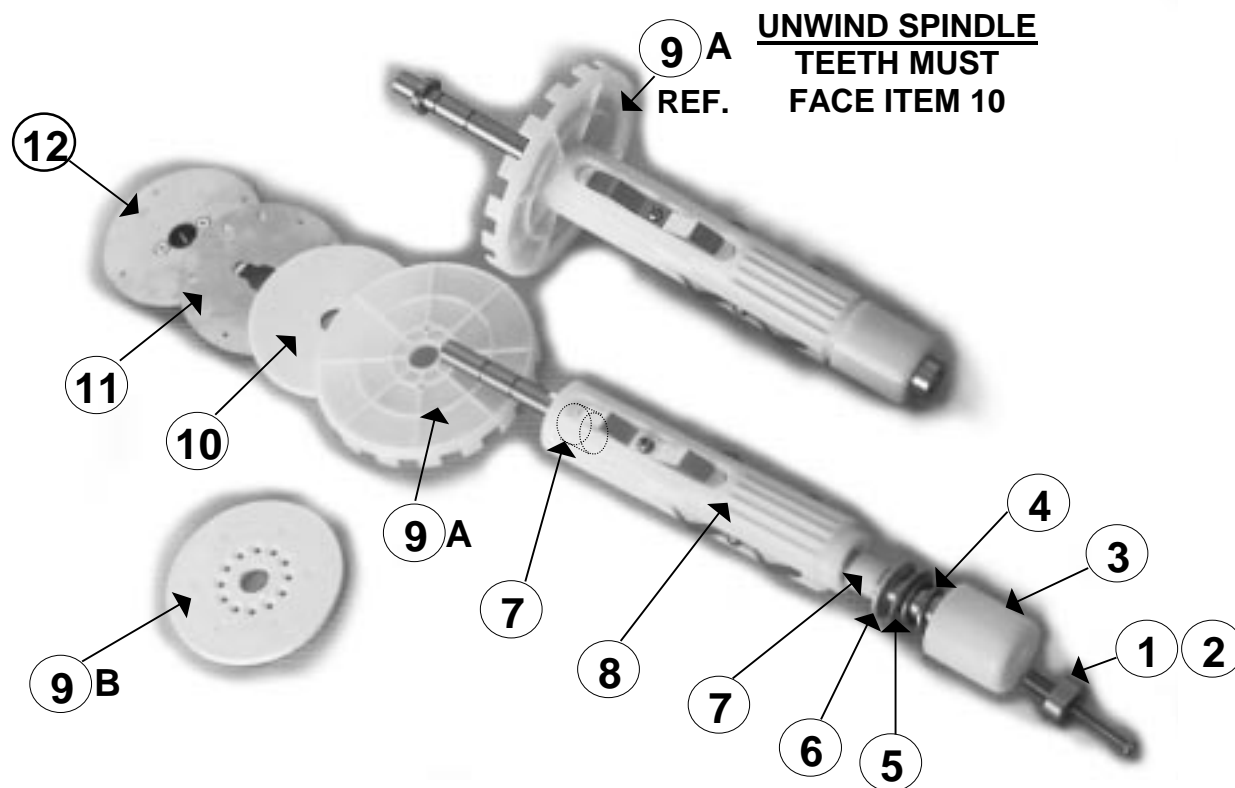
| STEP | PROCEDURE |
|------|--|
| 1a. | Switch the printer OFF and disconnect the power cable. |
| 2a. | Raise the lid on the mechanical side of the printer. |
| 3a. | Remove screw from cabinet side to allow printer halves to swing open for access to the inside of the printer. Fig. 6-31 |
| 4a. | Remove the following parts from each of the spindle shafts (in order): Figs. 6-32 |



| ITEM NO. | DESCRIPTION | QTY EA ASSY |
|----------|---------------------------|-------------|
| 1. | SCREW | (1) |
| 2. | ADJUSTMENT NUT | (1) |
| 3. | STOPPER COLLAR | (1) |
| 4. | SPRING | (1) |
| 5. | DISC | (1) |
| 6. | OIL-LESS DRY METAL WASHER | (1) |
| 7. | COLLAR | (2) |
| 8. | RIBBON BOSS | (1) |
| 9A & 9B | DISC PLATE (DIFFERENT) | (1) |
| 10. | FRICTION WASHER | (1) |
| 11. | HOLD PLATE | (1) |
| 12. | BACK PLATE | (1) |

NOTE: Disassemble one spindle at a time so that the other can be used for reference. Go to page 6-23 to reassemble.

Replacing the Ribbon Drive Clutch Washers



COMPONENTS ARE SHOWN ASSEMBLED

Figs. 6-32

Replacing the Ribbon Drive Clutch Washers

To reassemble the spindles, perform the following steps:

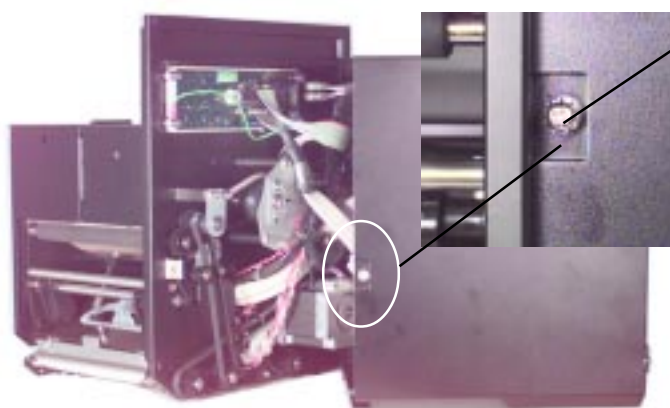
| STEP | PROCEDURE |
|------|---|
| 1b. | To each spindle, install Item 11 Plate with teeth facing outward and align the plate with the peg on the Ribbon Shaft Flange. |
| 2b. | Install Item 10 Felt Friction Washer onto the Ribbon Shaft and slide it against Item 11 Plate. |
| 3b. | Install (1) ea. Item 9A or 9B Rewind and Unwind Disc Plates onto Item 8 Ribbon Bosses. Align the hole in the Disc Plates over the pegs on Item 8. The teeth/slots on the unwind disc plate must be facing away from the Ribbon Boss. Install this assembly onto the Ribbon Shaft and slide it against the felt friction washer. |
| 4b. | Install Item 6 Oil-less Dry Metal Washer onto the ribbon shaft with the copper side facing inward (the black carbon side will face outward). Align Item 6 Washer with the peg on #8 Ribbon Boss. |
| 5b. | Install Item 5 Disc onto the ribbon shaft with the smooth side facing Item 6 Washer, (one side of the disc is smooth and the other side has sharp edges). |
| 6b. | Install Item 4 Spring onto the ribbon shaft. |
| 7b. | Install Item 3 Stopper Collar onto the ribbon shaft. |
| 8b. | Screw the Item 2 Adjustment Nut clockwise into the end of the ribbon shaft. |
| 9b. | Replace #1 Screw and tighten. |
| 10b. | Close the printer halves and replace the locking screw. |
| 11b. | Reconnect the power cable. |

NOTE: Do not over-tighten the adjustment nut since this screw is used to adjust the clutch tension. Adjust the clutch tension as outlined in Section 5-2.

6.11 Replacing the Ribbon Motion Sensor

To remove and replace the Ribbon Motion Sensor perform the following steps:

| STEP | PROCEDURE |
|------|---|
| 1. | Switch the printer OFF and disconnect the power cable. |
| 2. | Raise the lid on the mechanical side of the printer. |
| 3. | Remove screw from cabinet side to allow printer halves to swing open for access to the inside of the printer. Fig. 6-33 |
| 4. | Remove the dip switch cover. Fig. 6-34 |
| 5. | Remove (3) screws and the ring from around the unwind spindle. Fig. 6-34 |
| 6. | Twist open the cable tie and unplug SEN4 connector from the sensor harness at SEN4. Fig. 6-35 & 6-36 |
| 7. | Remove sensor mounting screw and push the sensor through the access hole. Fig. 6-34 |
| 8. | Remove (2) screws holding sensor to the mounting bracket. Fig. 6-37 |
| 9. | Replace sensor and reattach to the mounting bracket. Feed sensor connector back through the access hole and reattach to sensor harness at SEN4. Attach the sensor to the frame. |
| 10. | Replace the ring and screws removed in Step 5. Replace the dip switch cover. |
| 11. | Close the printer halves and replace the locking screw. |
| 12. | Reconnect the power cable. |



**REMOVE LOCKING
SCREW AND SWING
CABINET OPEN**

Fig. 6-33

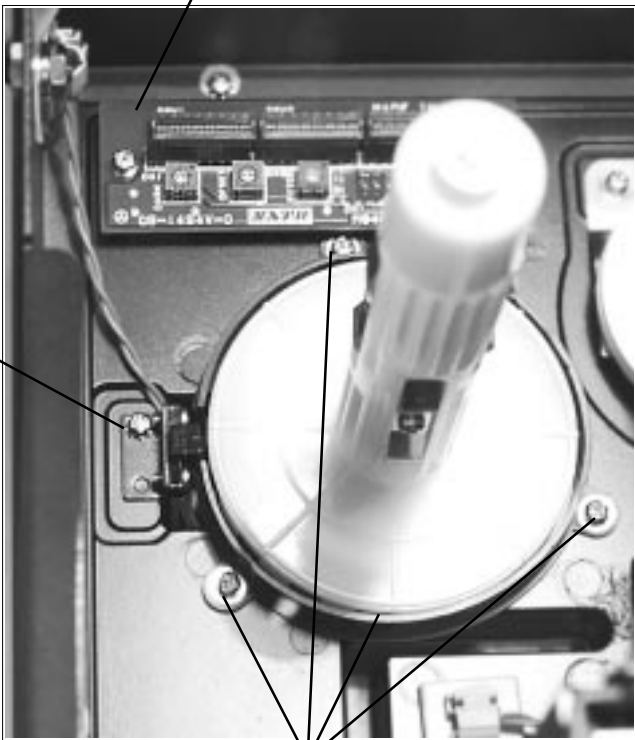
Replacing the Ribbon Motion Sensor



**TWIST OPEN
CABLE TIE**

Fig. 6-35

**REMOVE
MOUNTING
SCREW**

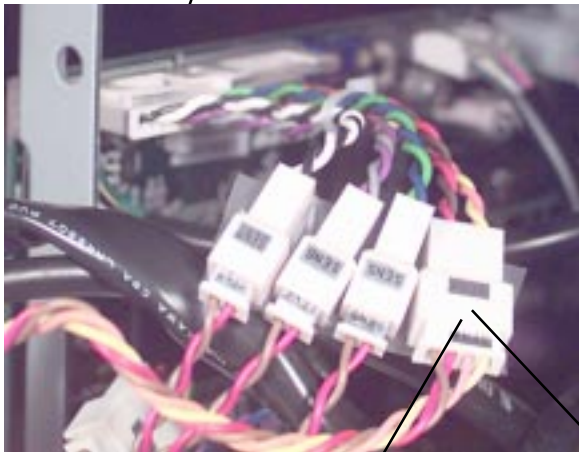


**REMOVE DIP
SWITCH COVER
(SHOWN REMOVED)**

**REMOVE (3) SCREWS
AND RING**

Fig. 6-34

**SENSOR HARNESS @ (CN9)
CONNECTOR FOR SEN4, SEN5,
SEN6 & SEN7**

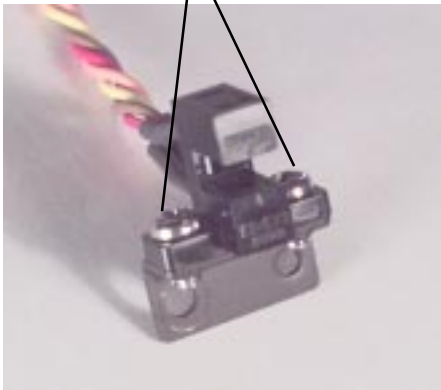


**CONNECTOR FROM
RIBBON MOTION SENSOR
INTO SENSOR HARNESS
MARKED "SEN4"**



**SENSOR HARNESS
CONNECTOR TO PCB
BOARD**

**(2) SCREWS ATTACHING
RIBBON MOTION SENSOR
TO BRACKET**



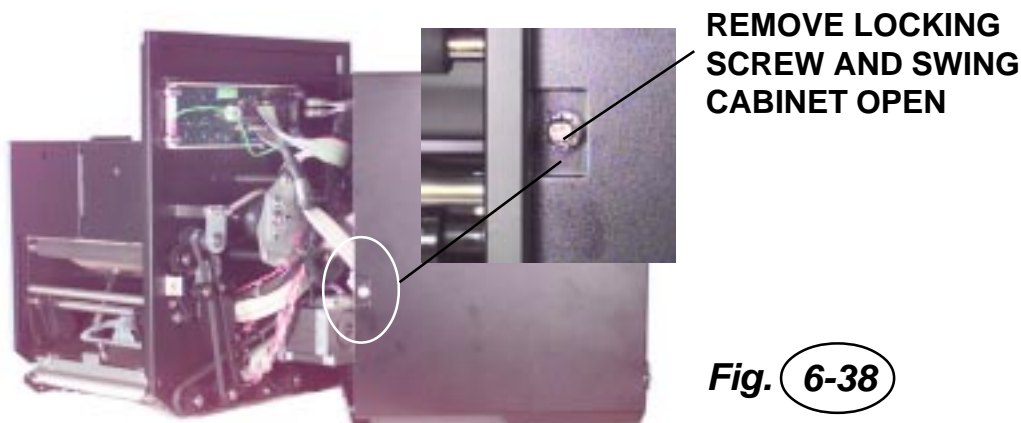
Figs. 6-36

Fig. 6-37

6.12 Replacing the Cover Open Switch

To remove and replace the Cover Open Switch perform the following steps:

| STEP | PROCEDURE |
|------|---|
| 1. | Switch the printer OFF and disconnect the power cable. |
| 2. | Raise the lid on the mechanical side of the printer. |
| 3. | Remove screw from cabinet side to allow printer halves to swing open for access to the inside of the printer. Fig. 6-38 |
| 4. | Twist open the cable tie and unplug SEN6 connector from the sensor harness at SEN6. Fig. 6-39 & 6-40 |
| 5. | Remove the screw securing the ribbon motion sensor and move the sensor just enough to allow the connector SEN6 on the end of the sensor to slide through the access hole. Fig. 6-41 & 6-42 |
| 6. | Remove (2) screws holding sensor to the cabinet side. Fig. 6-43 |
| 7. | Replace sensor and reattach to the cabinet side. Feed sensor connector back through the access hole and replace tie. Reattach to sensor harness at SEN6. |
| 8. | Remount the ribbon motion sensor removed in Step 5. |
| 9. | Close the printer halves and replace the locking screw. |
| 10. | Reconnect the power cable. |



Replacing the Cover Open Switch



Fig. 6-39

**TWIST OPEN
CABLE TIE**

**REMOVE MOUNTING
SCREW FROM
RIBBON MOTION
SENSOR**

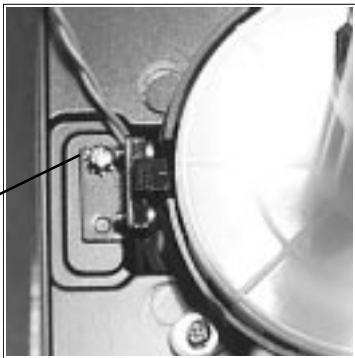


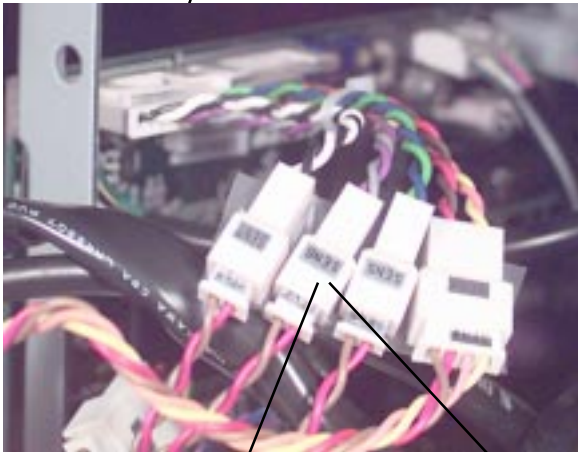
Fig. 6-41

**PULL SEN6 THROUGH
ACCESS HOLE**



Fig. 6-42

**SENSOR HARNESS @ (CN9)
CONNECTOR FOR SEN4, SEN5,
SEN6 & SEN7**



**CONNECTOR FROM COVER
OPEN SWITCH INTO
SENSOR HARNESS
MARKED "SEN6"**

Figs. 6-40

**SENSOR HARNESS
CONNECTOR TO PCB
BOARD**



**REMOVE (2) SCREWS TO
DETACH SWITCH
FROM CABINET**

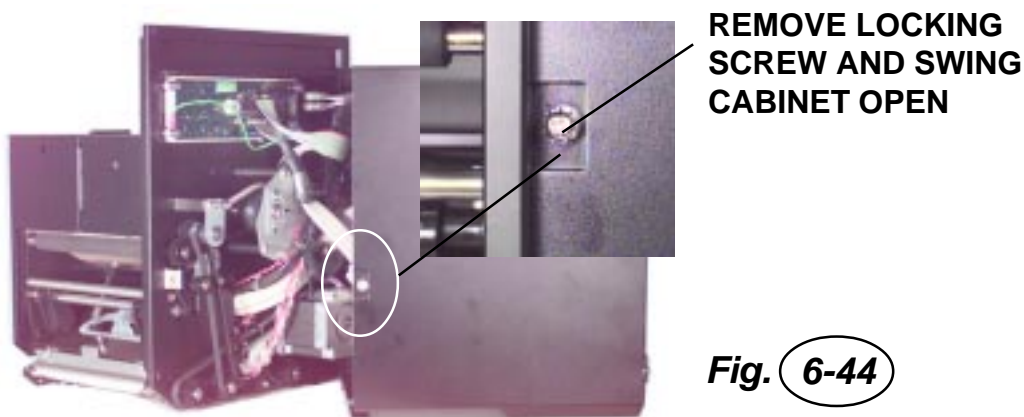


Fig. 6-43

6.13 Replacing the Head Open Switch

To remove and replace the Head Open Switch perform the following steps:

| STEP | PROCEDURE |
|------|--|
| 1. | Switch the printer OFF and disconnect the power cable. |
| 2. | Raise the lid on the mechanical side of the printer. |
| 3. | Remove screw from cabinet side to allow printer halves to swing open for access to the inside of the printer. Fig. 6-44 |
| 4. | Remove (2) screws holding sensor to the cabinet side. Fig. 6-45 |
| 5. | Open the bundle tie and unplug SEN5 connector from the sensor harness at SEN5. Fig. 6-46 & 6-47 |
| 6. | Draw the sensor through the access hole. |
| 7. | Replace sensor and reattach to the cabinet side. Feed sensor connector back through the access hole and fasten bundle tie. Reattach to sensor harness at SEN5. |
| 8. | Close the printer halves and replace the locking screw. |
| 9. | Reconnect the power cable. |



Replacing the Head Open Switch

REMOVE (2) SCREWS TO
DETACH SWITCH
FROM CABINET



Fig. 6-45

PULL SEN5 THROUGH
ACCESS HOLE

OPEN BUNDLE TIE

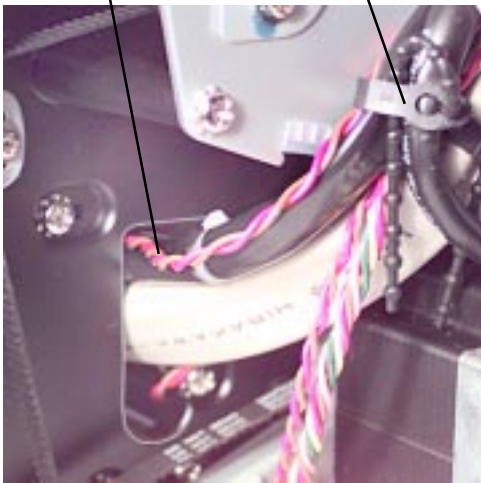
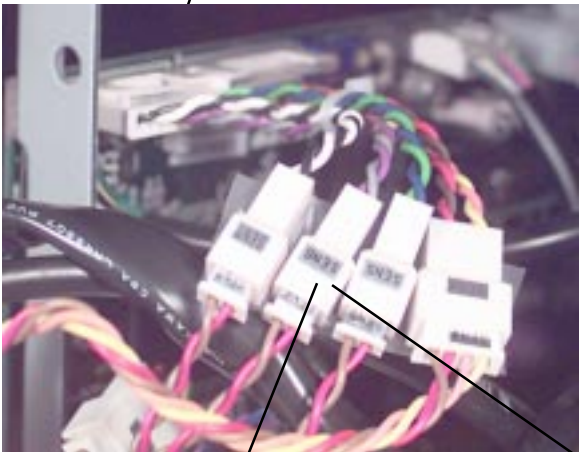


Fig. 6-46

SENSOR HARNESS @ (CN9)
CONNECTOR FOR SEN4, SEN5,
SEN6 & SEN7



CONNECTOR FROM HEAD
OPEN SWITCH INTO
SENSOR HARNESS
MARKED "SEN5"

SENSOR HARNESS
CONNECTOR TO PCB
BOARD

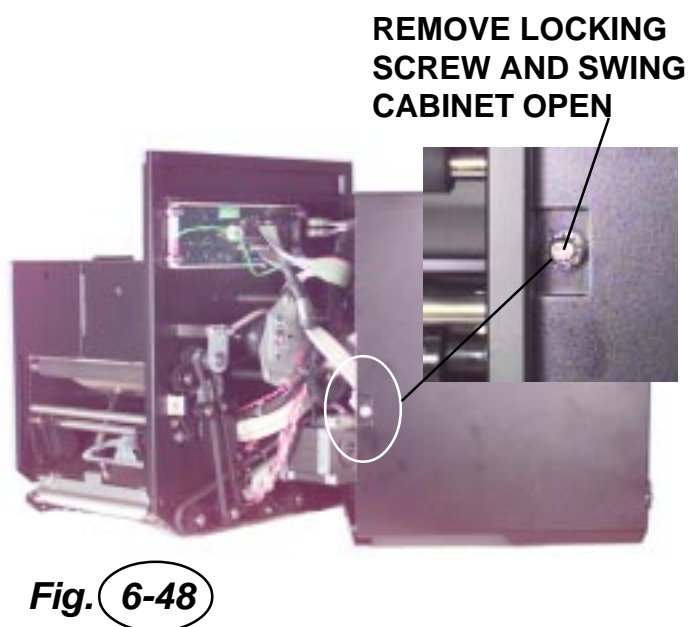


Figs. 6-47

6.14 Replacing the Label Gap Sensor Board (Bottom 1/2) and “Eye-Mark” Sensor (Reflective) Board

The bottom 1/2 of the Label Gap Sensor and the “Eye-Mark” Sensor is combined on one phenolic board. Access to replace the board is from the under side of the printer.

| STEP | PROCEDURE |
|------|--|
| 1. | Switch the printer OFF and disconnect the power cable. |
| 2. | Raise the lid on the mechanical side of the printer. |
| 3. | Remove screw from cabinet side to allow printer halves to swing open for access to the inside of the printer. Place side of cabinet down on flat surface to expose the bottom. Fig. 6-48 & 6-49 |
| 4. | Remove (2) screws, (2) spacers and plastic shield holding the Label Gap Sensor to the frame. Fig. 6-50 & 6-51 |
| 5. | Unsnap cable holder and open tie bundle. Unplug SEN1 connector from the sensor harness at SEN1. Fig. 6-51, 6-52 & 6-53 |
| 6. | Remove and replace the sensor module. Reattach to sensor harness at SEN1. |
| 7. | Close the printer halves and replace the locking screw. |
| 8. | Reconnect the power cable. |



PLACE SIDE OF CABINET DOWN ON FLAT SURFACE TO EXPOSE BOTTOM

Replacing the Label Gap Sensor Board (Bottom 1/2) and “Eye-Mark” Sensor (Reflective) Board

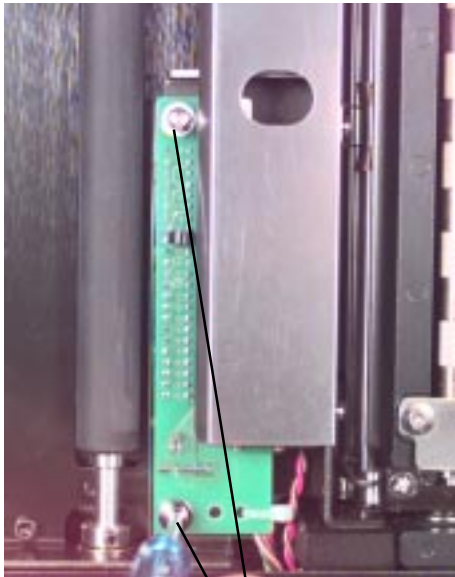


Fig. 6-50

**REMOVE (2) SCREWS,
(2) SPACERS AND
PLASTIC SHIELD**

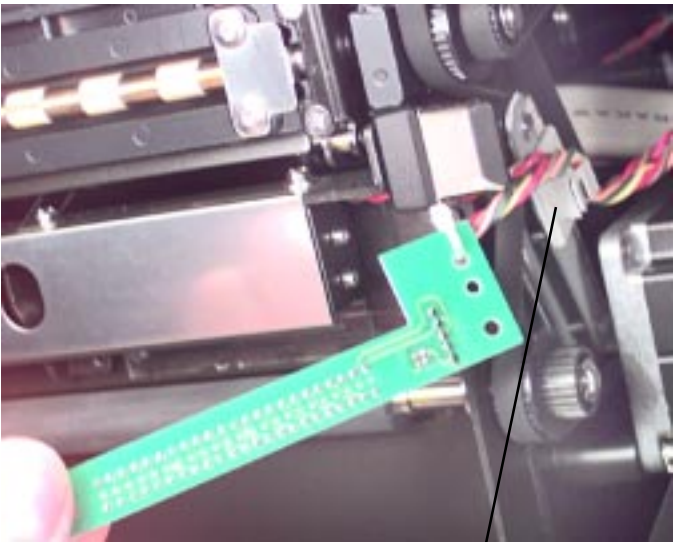
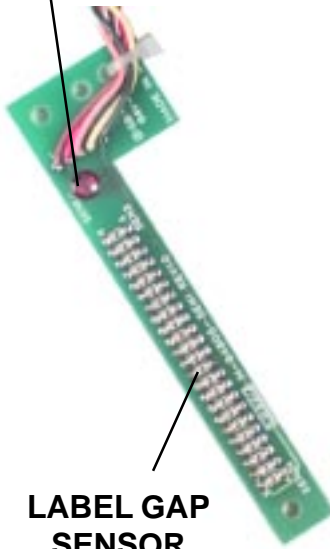


Fig. 6-51

**UNSNAP CABLE
HOLDER**

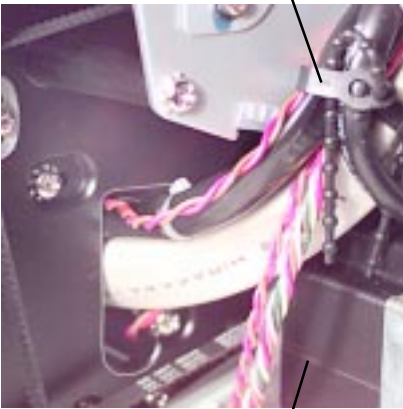
**“EYE-MARK
SENSOR**



**LABEL GAP
SENSOR
(BOTTOM 1/2)**

Figs. 6-52

OPEN BUNDLE TIE



SEN1 CABLE

**CONNECTOR FROM LABEL
GAP SENSOR BOARD INTO
SENSOR HARNESS
MARKED “SEN1”**

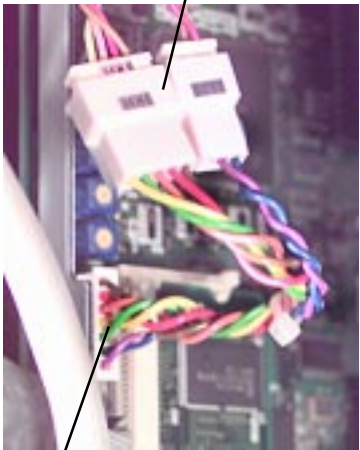


Fig. 6-53

**SENSOR HARNESS @ (CN8)
CONNECTOR FOR SEN1, & SEN2**

6.15 Replacing the Label Gap Sensor Board (Top 1/2)

Access to the top 1/2 of the Label Gap Sensor is through the front of the printer.

| STEP | PROCEDURE |
|------|---|
| 1. | Switch the printer OFF and disconnect the power cable. |
| 2. | Remove screw from cabinet side and swing the cabinet open. Fig. 6-54 |
| 3. | Raise the lid on the mechanical side of the printer. |
| 4. | Remove (2) screws from media hold down. Carefully wiggle off cover to expose the sensor assembly. Figs. 6-55 |
| 5. | Raise the print head. Insert screw driver in space under the print head and remove (2) screws holding the sensor assembly to the bottom portion of the media hold down frame. Figs. 6-56 |
| 6. | Use an allen wrench and remove (2) screws holding the sensor to the sensor bracket. Detach the sensor. Fig. 6-57 |
| 7. | Unsnap the cable holder and detach the sensor cable. Fig. 6-58 |
| 8. | Unplug sensor connector from sensor harness marked "SEN2" and pull the connector end through the access hole. Fig. 6-59 |
| 9. | Remove and replace the sensor module. Feed sensor connector back through the access hole and reattach SEN2 to the cable harness. |
| 10. | Replace parts previously removed. |
| 11. | Close the printer cabinet and replace the locking screw. |
| 12. | Reconnect the power cable. |

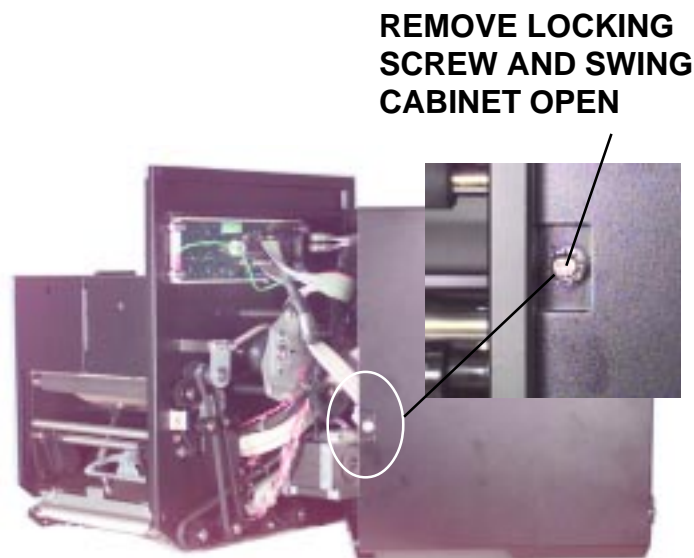
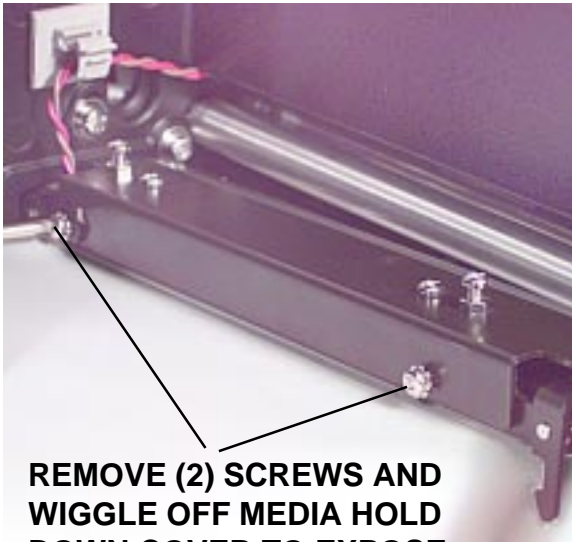


Fig. 6-54

Replacing the Label Gap Sensor Board (Top 1/2)

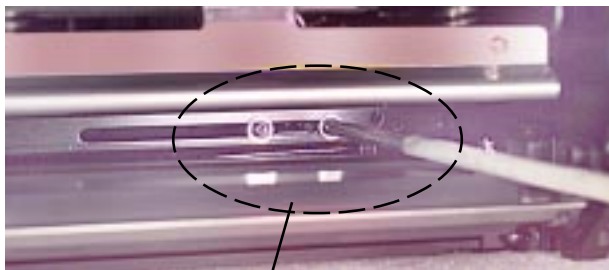


REMOVE (2) SCREWS AND
WIGGLE OFF MEDIA HOLD
DOWN COVER TO EXPOSE
SENSOR ASSEMBLY



SENSOR ASSEMBLY

Figs. 6-55



CAREFULLY SLIDE SCREW
DRIVER THROUGH SPACE
AND REMOVE (2) SCREWS
TO DETACH SENSOR ASSY

SENSOR ASSEMBLY

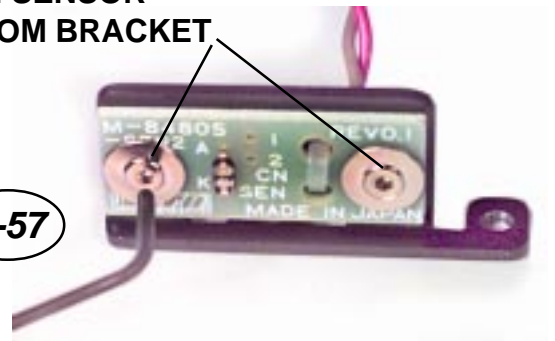


Figs. 6-56



USE ALLEN WRENCH AND
REMOVE 2 SCREWS TO
DETACH SENSOR
MODULE FROM BRACKET

Fig. 6-57



Replacing the Label Gap Sensor Board (Top 1/2)

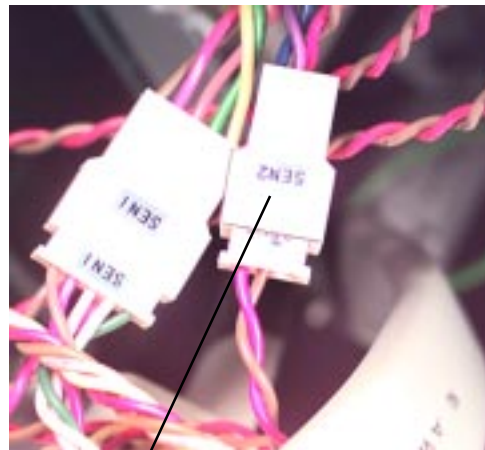
UNSNAP CABLE HOLDER
AND DETACH SENSOR
CABLE



Fig. 6-58



UNPLUG SENSOR CONNECTOR
FROM SENSOR HARNESS
MARKED "SEN2" AND PULL
THROUGH ACCESS HOLE

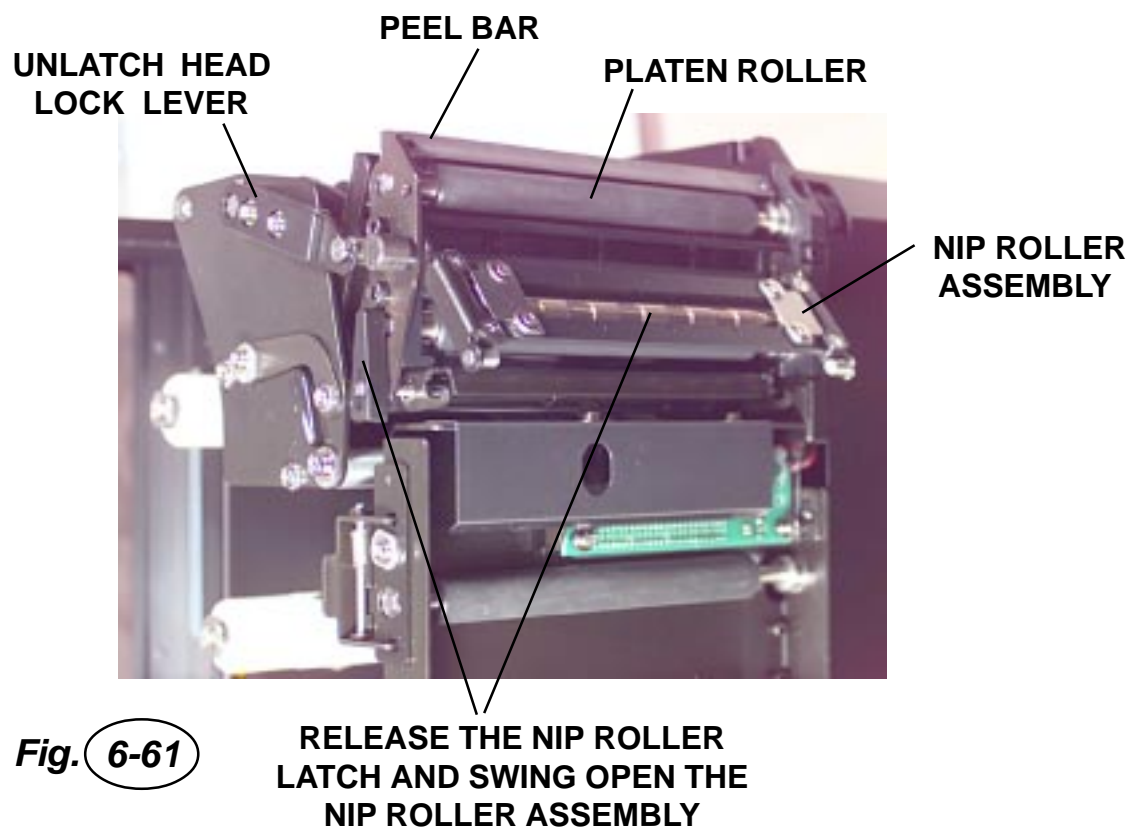
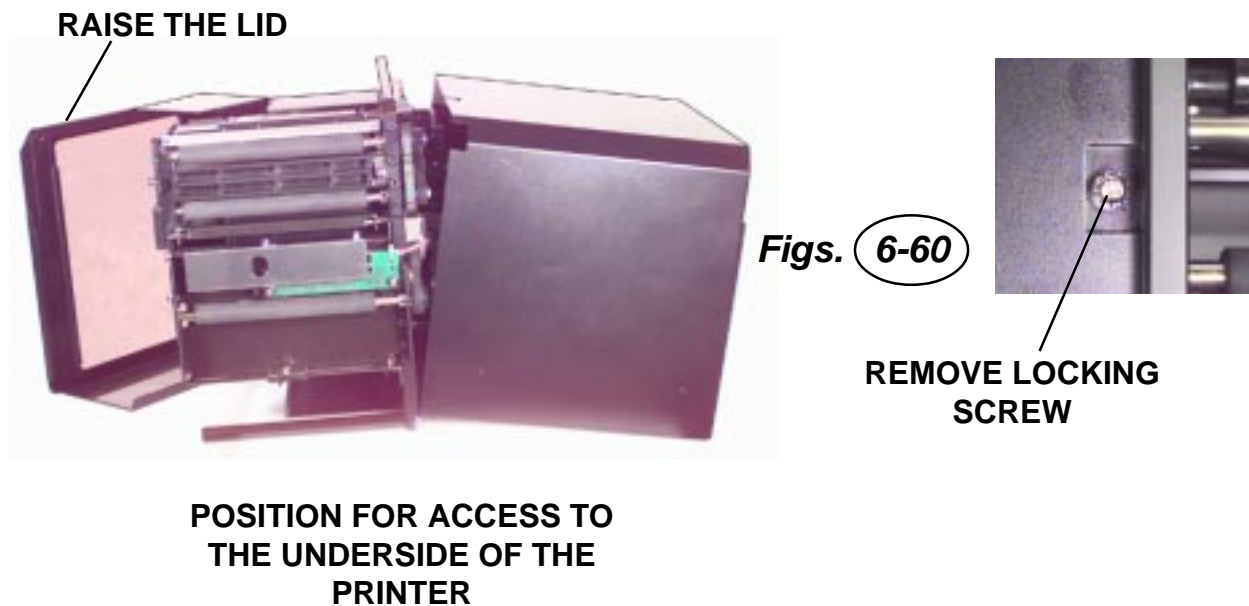


Figs. 6-59

6.16 Replacing the Platen

| STEP | PROCEDURE |
|------|---|
| 1. | Switch the printer OFF and disconnect the power cable. |
| 2. | Position for access to the underside of the printer. Remove screw from cabinet side and raise the lid. Figs. 6-60 |
| 3. | Unlatch the head lock lever if engaged. Fig. 6-61 |
| 4. | Release the nip roller latch and swing open the nip roller assembly. Fig. 6-61 |
| 5. | Unfasten the thumb screw and remove the nip roller assembly. Figs. 6-62 |
| 6. | Remove (2) Allen screws attaching bracket to platen frame Fig. 6-63 |
| 7. | Remove (4) Allen screws attaching cradle frame to chassis. Use an open end wrench and remove pin. Pry off cover and remove Allen screw under cover. Fig. 6-64 |
| 8. | Remove (1) Allen screw which holds one side of the peel bar to the small bracket that is attached to the chassis. Fig. 6-65 |
| 9. | Reposition printer for access to the motor. Loosen (2) motor mounting screws to free belts from platen and feed rollers. Fig. 6-66 |
| 10. | Carefully separate the cradle frame containing the platen and components from the chassis. The peel bar will still be attached on one end to the cradle frame. Fig. 6-67 CAUTION! Be careful of the cable connections which are attached. |
| 11. | Remove "E" clip from the end of the shaft which holds a stepped gear to the end of the platen shaft. Push shaft slightly back into the gear so that the end of support bearing will clear the cradle. Repeat this step for the feed roller. Figs 6-67 & 6-68 |
| 12. | Push shaft slightly forward so that the end of the support bearing will clear the cradle frame. Platen and components can now be easily separated. Figs. 6-68 |
| 13. | Replace the platen roller and reattach the components. Position collar against bushing and tighten screw after installation. Figs. 6-69 |
| 14. | Reassemble other parts previously removed. |
| 15. | Remount the motor and adjust belt tension as outlined in Section 5-6. |
| 16. | Close the printer and replace the locking screw. |
| 17. | Reconnect the power cable. |

Replacing the Platen



Replacing the Platen



**UNFASTEN AND REMOVE
THUMB SCREW AND
REMOVE NIP ROLLER
ASSEMBLY**



Figs. 6-62



**REMOVE (2) ALLEN
SCREWS ATTACHING
BRACKET TO PLATEN
FRAME**

Fig. 6-63

**PRY OFF COVER AND
REMOVE ALLEN SCREW
UNDER COVER**

**PLATEN
ROLLER**



**REMOVE (4)
ALLEN SCREWS**

**USE AN OPEN END
WRENCH AND
REMOVE PIN**

Fig. 6-64

Replacing the Platen

Note: Platen and Feed Rollers are identical



SMALL BRACKET

REMOVE ALLEN
SCREW

PLATEN ROLLER

PEEL BAR

CHASSIS

Fig. 6-65

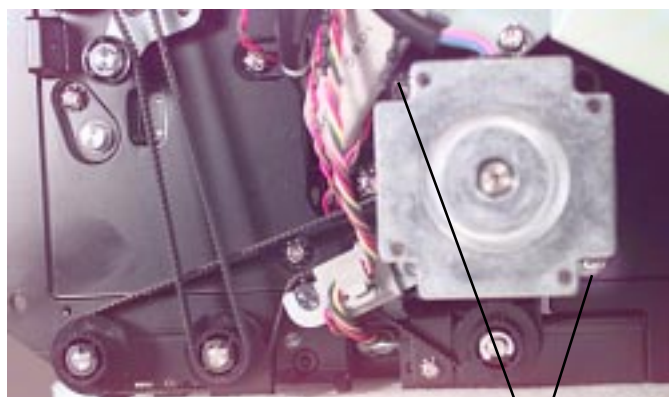
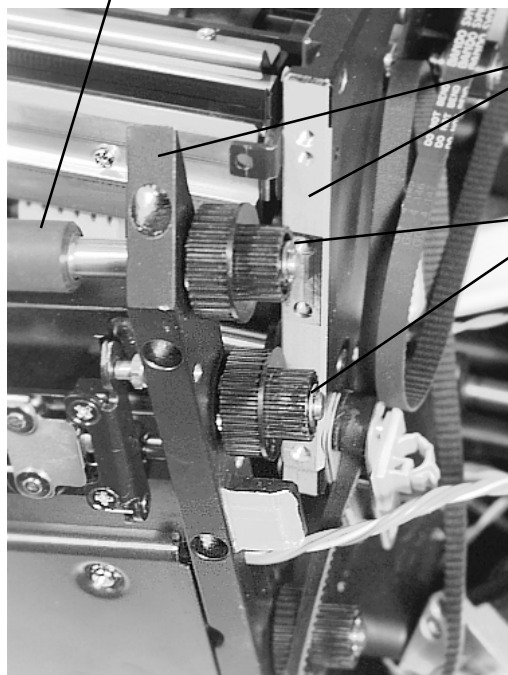


Fig. 6-66

PLATEN ROLLER



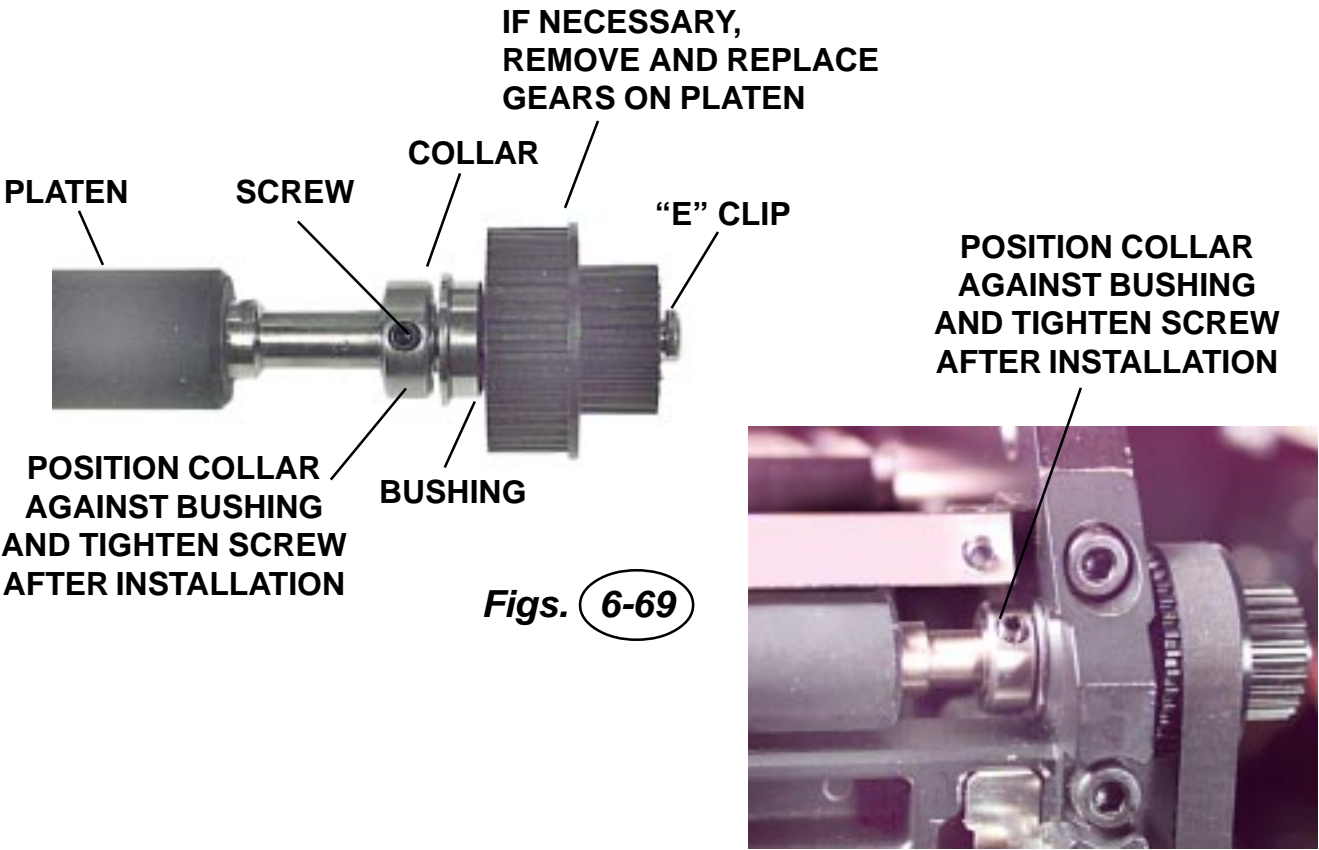
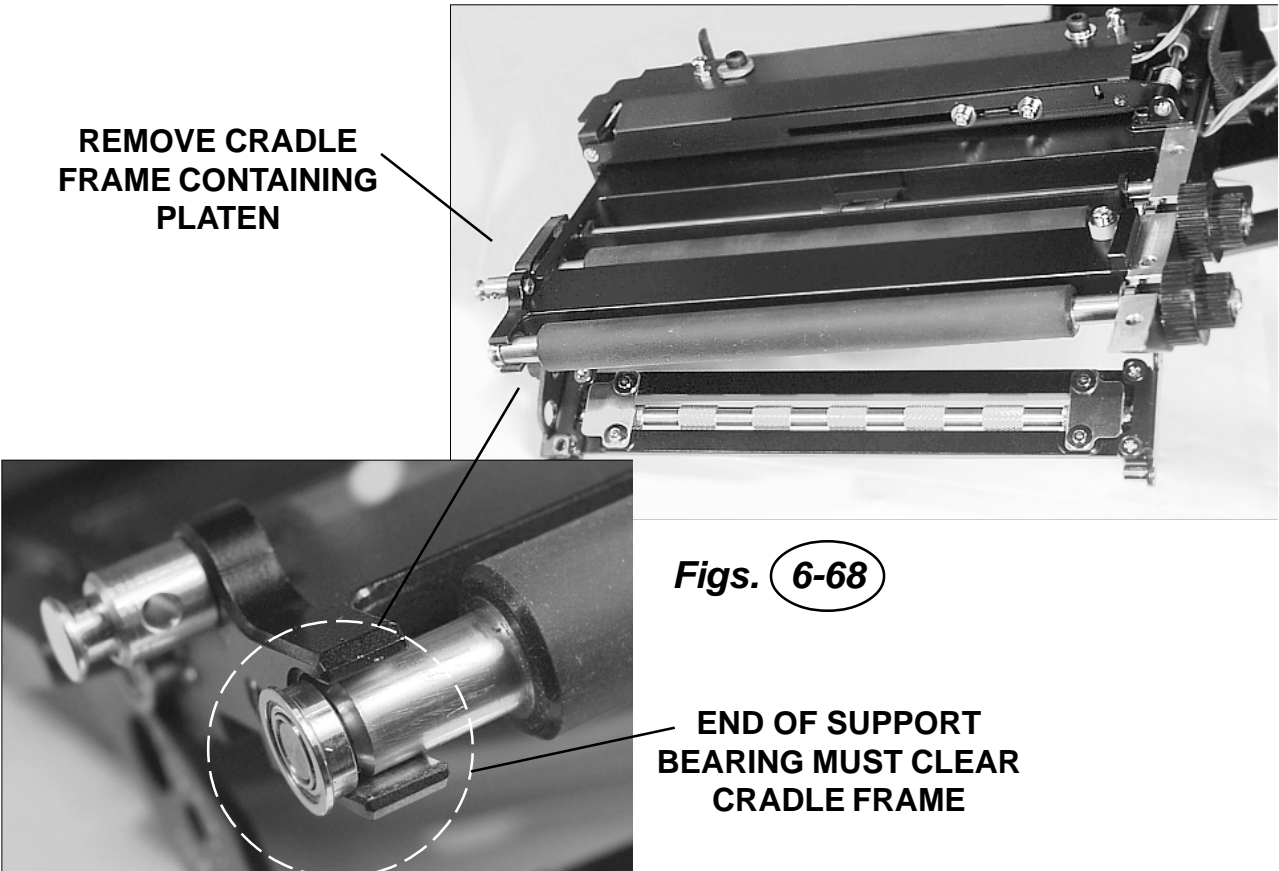
CAREFULLY SEPARATE
CRADLE FRAME FROM
THE CHASSIS

"E" CLIPS

LOOSEN (2) MOTOR
MOUNTING SCREWS
TO FREE BELTS FROM
PLATEN AND FEED
ROLLERS

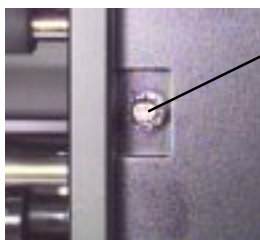
Fig. 6-67

Replacing the Platen



6.17 Replacing the Label Out Sensor

| STEP | PROCEDURE |
|------|---|
| 1. | Switch the printer OFF and disconnect the power cable. |
| 2. | Remove the screw from the cabinet side and swing the cabinet open. Fig. 6-70 |
| 3. | Raise the lid. |
| 4. | Unlatch the head lock lever if engaged. Figs. 6-71 |
| 5. | Release the nip roller latch and swing open the nip roller assembly. Figs. 6-71 |
| 6. | Unfasten the thumb screw and remove the nip roller assembly. Fig. 6-72 |
| 7. | Remove (2) Allen screws attaching bracket to platen frame and move bracket slightly out of position at the same time holding down the nip roller latch for access to the screw on the cover plate that covers the label out sensor. Fig. 6-73 |
| 8. | Remove (2) screws to detach cover plate. Fig. 6-74 |
| 9. | Remove (1) screw holding the Label Out Sensor to the frame. Figs. 6-75 |
| 10. | Remove (2) screws holding the sensor module to the bracket. Fig. 6-76 |
| 11. | Unsnap the cable holder and detach the sensor cable. Fig. 6-77 |
| 12. | Unplug sensor cable from sensor harness marked "SEN7" and pull the connector end through the access hole. Fig. 6-78 |
| 13. | Remove and replace the sensor module. Feed sensor connector back through the access hole and reattach SEN7 to the cable harness. |
| 10. | Replace parts previously removed. |
| 11. | Close the printer cabinet and replace the locking screw. |
| 12. | Reconnect the power cable. |



**REMOVE LOCKING
SCREW AND SWING
THE CABINET OPEN**

Fig. 6-70

Replacing the Label Out Sensor

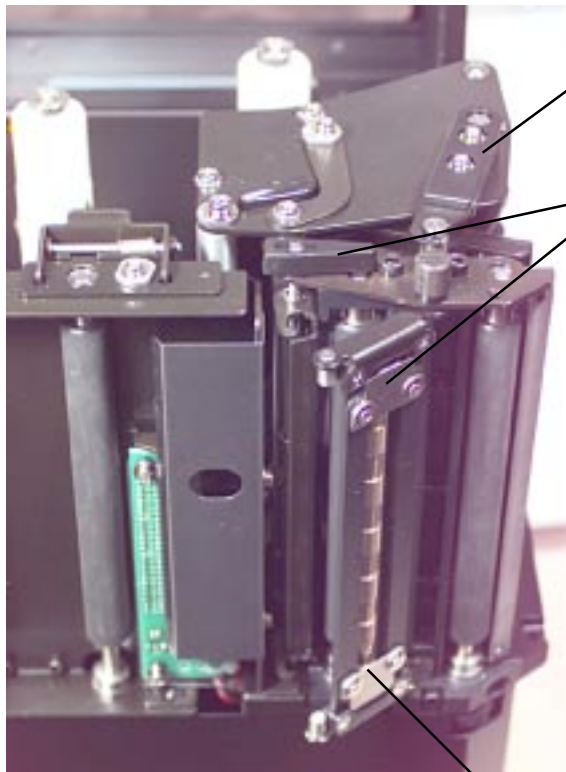


Fig. 6-71

NIP ROLLER ASSEMBLY

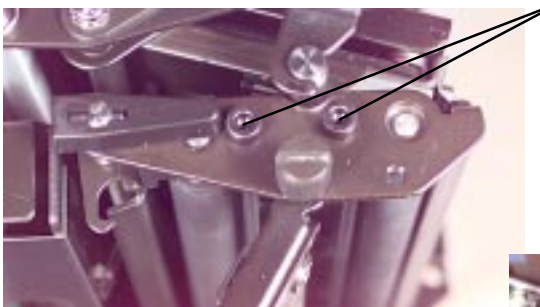
**UNLATCH HEAD
LOCK LEVER**

**RELEASE THE NIP ROLLER
LATCH AND SWING OPEN THE
NIP ROLLER ASSEMBLY**

**UNFASTEN AND REMOVE
THUMB SCREW AND
REMOVE NIP ROLLER
ASSEMBLY**

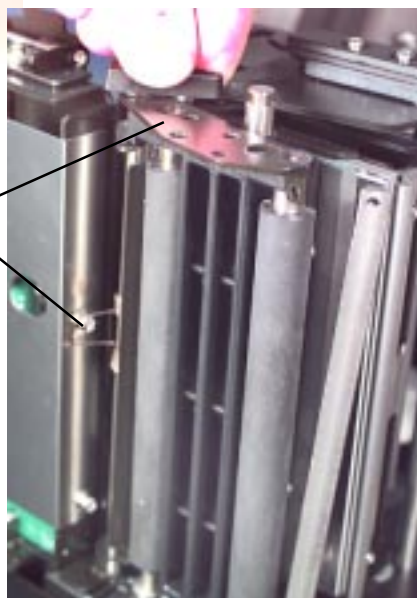


Fig. 6-72



Figs. 6-73

**MOVE BRACKET SLIGHTLY
OUT OF POSITION AT THE
SAME TIME HOLDING DOWN
THE NIP ROLLER LATCH
FOR ACCESS TO THE
SCREW ON THE COVER
PLATE**



**REMOVE (2) ALLEN
SCREWS ATTACHING
BRACKET TO PLATEN
FRAME**

Replacing the Label Out Sensor

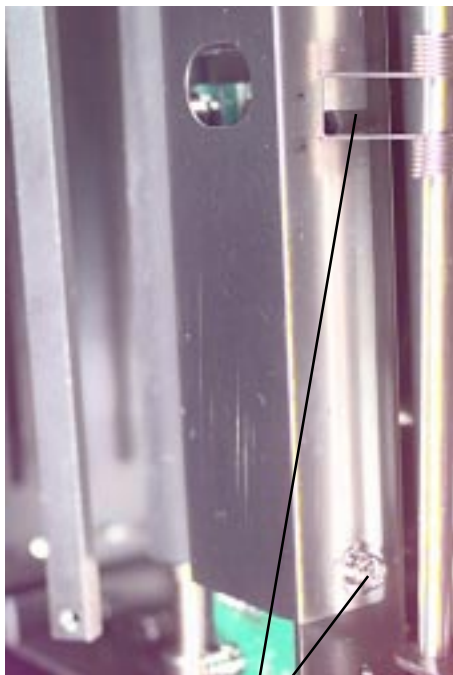
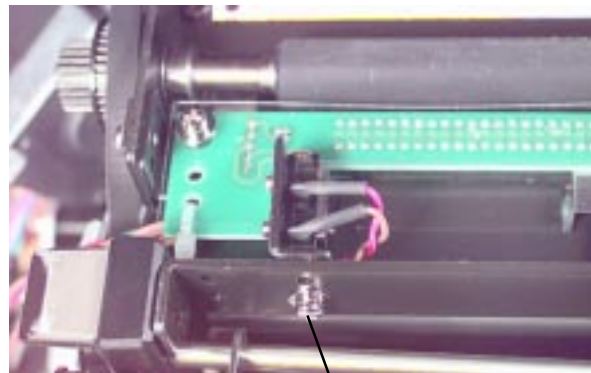


Fig. 6-74 REMOVE (2) SCREWS TO DETACH COVER PLATE



Figs. 6-75

REMOVE (1) SCREW TO DETACH LABEL OUT SENSOR FROM FRAME



REMOVE (2) SCREWS TO DETACH SENSOR MODULE FROM FRAME

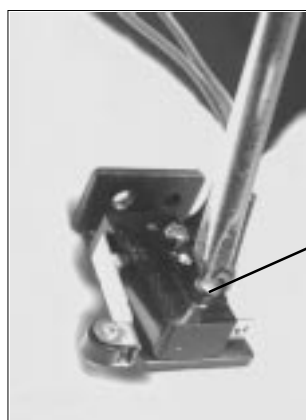


Fig. 6-76

UNSNAP THE CABLE HOLDER AND DETACH THE SENSOR CABLE

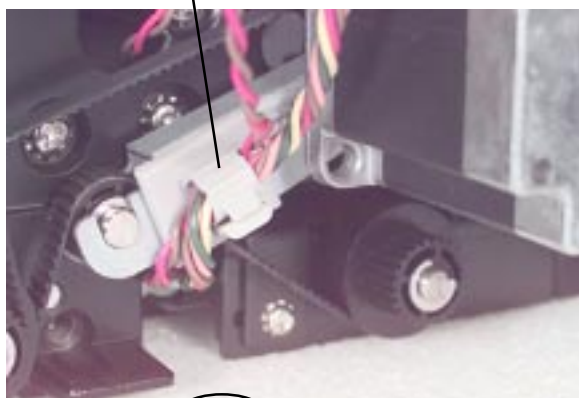


Fig. 6-77



Fig. 6-78

UNPLUG SENSOR CABLE FROM SENSOR HARNESS MARKED "SEN7"

6.18 Replacing the Print Head

The print head can be easily replaced. No critical adjustments are required. Before replacing the print head, check the head counter values by printing a test pattern.

| STEP | PROCEDURE |
|------|---|
| 1. | Switch the printer OFF and disconnect the power cable. |
| 2. | Raise the lid. |
| 3. | Engage the head lock lever and remove the center stud holding the head bracket to the print head. Fig. 6-79 |
| 4. | Remove (2) screws and detach ribbon adjust plate. |
| 5. | Disengage the head lock lever and drop down the head. Fig. 6-80 |
| 6. | Carefully disconnect the print head data cable and the print head power cable and remove the print head. Fig. 6-80 |
| 7. | Install the new print head by reconnecting the print head cable and the print head power cable. |
| 8. | Engage the head lock lever and position the print head so that the alignment pins seat into the head recesses. Fig. 6-80 |
| 9. | Insert the center stud through the bracket and into the head. Tighten the stud securely. |
| 10. | Replace the ribbon adjust plate. |
| 11. | Close the printer and replace the locking screw. Close the lid. |
| 12. | Reconnect the power cable. |

Before returning the printer to normal service, you should perform the following steps:

- Head Counter Clear
- Confirm that the head cables are connected and do not touch the head. Also confirm that you can open and close the head without restriction and that the ribbon guide plate adjustment is correct.
- Print a test pattern.

Caution: Do not remove or loosen the two screws on either side of the center screw. **Fig. 6-81**

Caution: Head is very fragile and can be easily scratched so handle carefully.

Replacing the Print Head

REMOVE CENTER STUD WITH FLAT
BLADE SCREWDRIVER

HEAD LOCK LEVER
ENGAGE/DISENGAGE

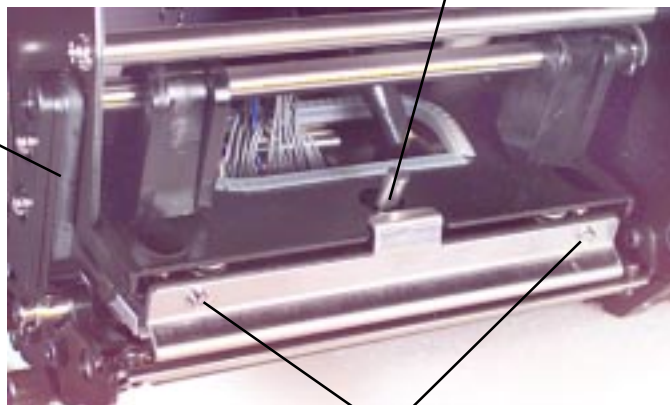
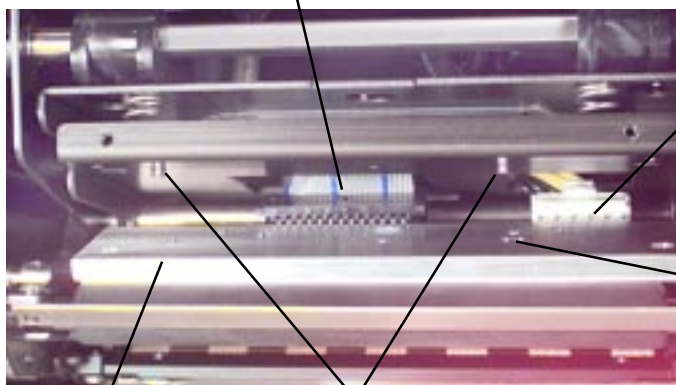


Fig. 6-79

REMOVE (2) SCREWS AND
DETACH RIBBON ADJUST
PLATE



POWER CABLE

RECESS

ALIGNMENT PINS

PRINT HEAD

Fig. 6-80

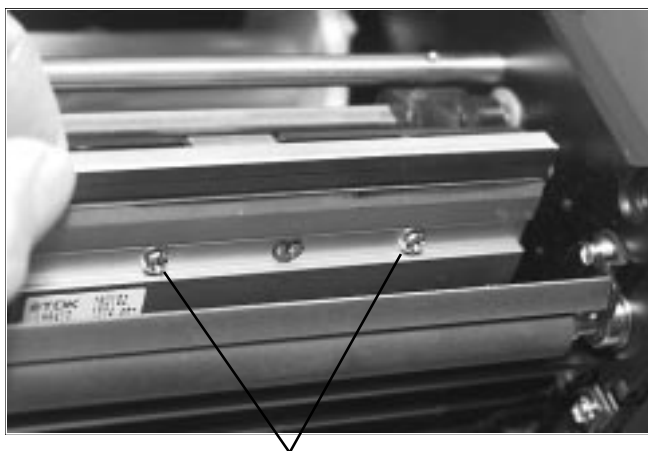


Fig. 6-81

DO NOT REMOVE OR
LOOSEN THESE TWO
SCREWS

Factory Resets

7.1 Overview

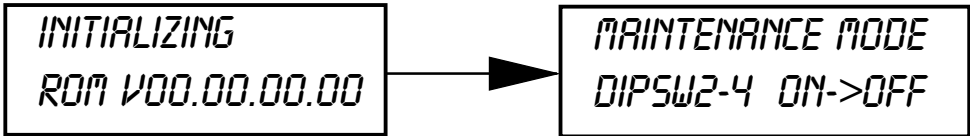



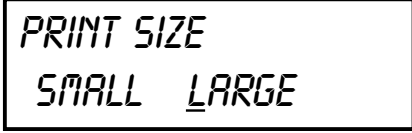

The Factory Reset Mode allows you to:

- *Factory Settings/Test Print*
- *Clear Head Counters*
- *Clear Dispenser Counter*
- *Clear Cutter Counter*
- *Clear EEPROM*

7.2 Factory Settings/Test Print

To reset the printer to the factory settings, perform the following steps.

Caution: *Resetting the printer will clear all registers.*

| STEP | PROCEDURE |
|------|--|
| 1. | Record all current dip switch positions, then place all switches in the OFF position. |
| 2. | Place the DSW2-4 in the ON or up position. |
| 3. | Press the LINE and FEED key while simultaneously turning ON the power switch. When the printer beeps, release the keys. The following screens will appear. |
| |  |
| 4. | Place the DSW-4 in the OFF position and the following screen will appear. |
| |  |
| 5. | Press the FEED key to display the next screen. |
| |  |
| 6. | Press the LINE key once to change the message from NONE to ALL . |
| |  |
| 7. | Press the FEED key to clear the EEPROM. After a pause, the next screen will appear. |
| |  |
| 8. | Select the print label size by pressing the LINE key. The default is LARGE. |
| 9. | Press the FEED key for a test print. Press the FEED key again to stop printing. |
| | <div style="display: flex; align-items: flex-start;"> <div style="flex: 1;">  </div> <div style="flex: 1; padding-left: 20px;"> <p>Warning: This test activates all the heating elements on the print head and therefore should be used for testing purposes only with full width labels to avoid damaging the print head.</p> </div> </div> |
| 10. | Verify that the counters on the test print have reset to 0.0 km. |
| 11. | Power OFF the printer and confirm that all switches are in the OFF or down position. |

7.3 Clear Head Counters

To reset the printer to the factory settings, perform the following steps.

Caution: *Resetting the printer will clear all registers.*

| STEP | PROCEDURE |
|------|--|
| 1. | Record all current dip switch positions, then place all switches in the OFF position. |
| 2. | Place the DSW2-4 in the ON or up position. |
| 3. | Press the LINE and FEED key while simultaneously turning ON the power switch. When the printer beeps, release the keys. The following screens will appear. |
| | <div>INITIALIZING ROM V00.00.00.00</div> <div>MAINTENANCE MODE DIPSW2-4 ON->OFF</div> |
| 4. | Place the DSW-4 in the OFF position and the following screen will appear. |
| | <div>FACTORY MODE</div> <div>The Head Counter will be cleared by the following steps:</div> |
| 5. | Press the FEED key to display the next screen. |
| | COUNTER CLEAR NONE |
| 6. | Press the LINE key twice to change the message from NONE to HEAD . |
| | COUNTER CLEAR HEAD |
| 7. | Press the FEED key to clear the Head Counter. After a pause, the next screen will appear. |
| | PRINT SIZE SMALL LARGE |
| 8. | Select the print label size by pressing the LINE key. The default is LARGE . |
| 9. | Press the FEED key for a test print. Press the FEED key again to stop printing. |
| | <div>TEST PRINT PRESS FEED KEY</div> <div>Warning: This test activates all the heating elements on the print head and therefore should be used for testing purposes only with full width labels to avoid damaging the print head.</div> |
| 10. | Verify that the counters on the test print have reset to 0.0 km. |
| 11. | Power OFF the printer and confirm that all switches are in the OFF or down position. |

7.4 Clear Dispenser Counter

To reset the printer to the factory settings, perform the following steps.

Caution: *Resetting the printer will clear all registers.*

| STEP | PROCEDURE |
|------|---|
| 1. | Record all current dip switch positions, then place all switches in the OFF position. |
| 2. | Place the DSW2-4 in the ON or up position. |
| 3. | Press the LINE and FEED key while simultaneously turning ON the power switch. When the printer beeps, release the keys. The following screens will appear. |
| | <div> <div>INITIALIZING ROM V00.00.00.00</div> <div>→</div> <div>MAINTENANCE MODE DIPSW2-4 ON->OFF</div> </div> |
| 4. | Place the DSW-4 in the OFF position and the following screen will appear. |
| | <div>FACTORY MODE</div> |
| 5. | Press the FEED key to display the next screen. |
| | <div>COUNTER CLEAR NONE</div> |
| 6. | Press the LINE key three times to change the message from NONE to DIS . |
| | <div>COUNTER CLEAR DIS</div> |
| 7. | Press the FEED key to clear the DISPENSER Counter. After a pause, the next screen will appear. |
| | <div>PRINT SIZE SMALL LARGE</div> |
| 8. | Select the print label size by pressing the LINE key. The default is LARGE. |
| 9. | Press the FEED key for a test print. Press the FEED key again to stop printing. |
| | <div>TEST PRINT PRESS FEED KEY</div> <div> <p>Warning: This test activates all the heating elements on the print head and therefore should be used for testing purposes only with full width labels to avoid damaging the print head.</p> </div> |
| 10. | Verify that the counters on the test print have reset to 0.0 km. |
| 11. | Power OFF the printer and confirm that all switches are in the OFF or down position. |

7.5 Clear Cutter Counter

To reset the printer to the factory settings, perform the following steps.

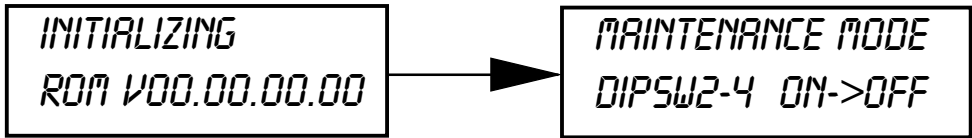


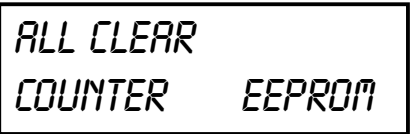
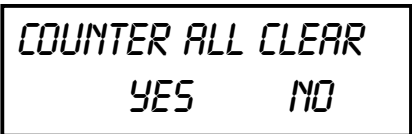
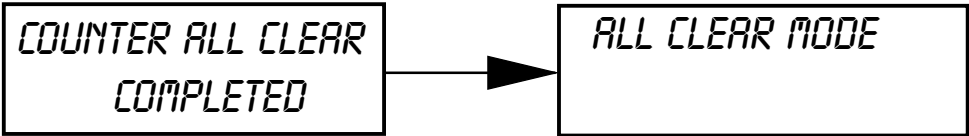
Caution: *Resetting the printer will clear all registers.*

| STEP | PROCEDURE |
|------|---|
| 1. | Record all current dip switch positions, then place all switches in the OFF position. |
| 2. | Place the DSW2-4 in the ON or up position. |
| 3. | Press the LINE and FEED key while simultaneously turning ON the power switch. When the printer beeps, release the keys. The following screens will appear. |
| | <div style="display: flex; align-items: center; justify-content: center;"> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <i>INITIALIZING</i> <i>ROM V00.00.00.00</i> </div> <div style="margin: 0 10px;">→</div> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <i>MAINTENANCE MODE</i> <i>DIPSW2-4 ON->OFF</i> </div> </div> |
| 4. | Place the DSW-4 in the OFF position and the following screen will appear. |
| | <div style="border: 1px solid black; padding: 10px; width: fit-content; margin: 0 auto;"> <i>FACTORY MODE</i> </div> |
| 5. | Press the FEED key to display the next screen. |
| | <div style="border: 1px solid black; padding: 10px; width: fit-content; margin: 0 auto;"> <i>COUNTER CLEAR</i> <i>NONE</i> </div> |
| 6. | Press the LINE key four times to change the message from NONE to CUT . |
| | <div style="border: 1px solid black; padding: 10px; width: fit-content; margin: 0 auto;"> <i>COUNTER CLEAR</i> <i>CUT</i> </div> |
| 7. | Press the FEED key to clear the Cutter Counter. After a pause, the next screen will appear. |
| | <div style="border: 1px solid black; padding: 10px; width: fit-content; margin: 0 auto;"> <i>PRINT SIZE</i> <i>SMALL <u>L</u>ARGE</i> </div> |
| 8. | Select the print label size by pressing the LINE key. The default is LARGE. |
| 9. | Press the FEED key for a test print. Press the FEED key again to stop printing. |
| | <div style="display: flex; align-items: flex-start;"> <div style="border: 1px solid black; padding: 10px; width: fit-content; margin-right: 20px;"> <i>TEST PRINT</i> <i>PRESS FEED KEY</i> </div> <div> <p>Warning: This test activates all the heating elements on the print head and therefore should be used for testing purposes only with full width labels to avoid damaging the print head.</p> </div> </div> |
| 10. | Verify that the counters on the test print have reset to 0.0 km. |
| 11. | Power OFF the printer and confirm that all switches are in the OFF or down position. |

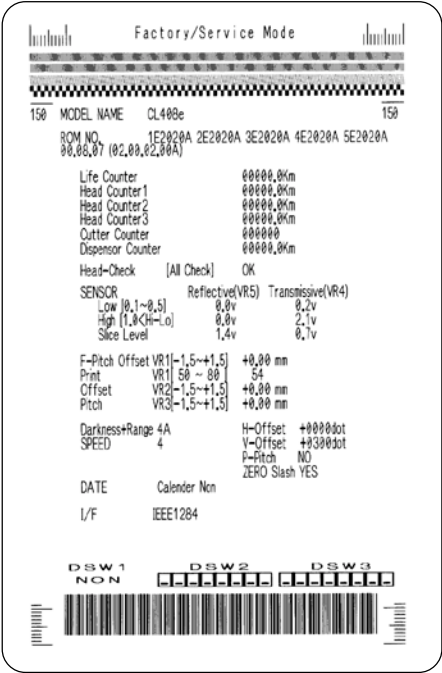
7.6 Clear EEPROM

To clear the EEPROM, perform the following steps.

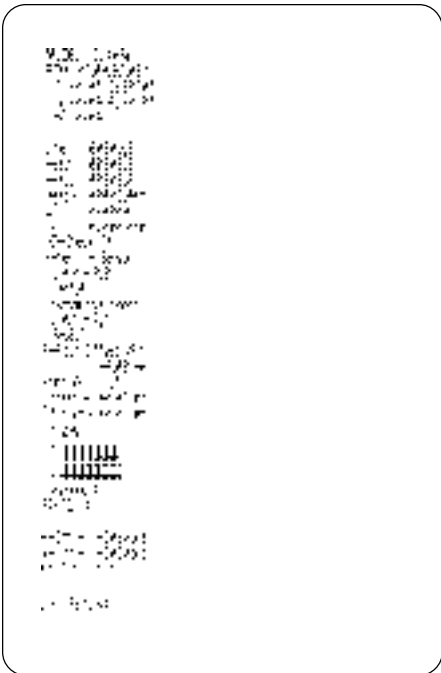
Caution: *Resetting the printer will clear all registers.*

| STEP | PROCEDURE |
|------|--|
| 1. | Record all current dip switch positions, then place all switches in the OFF position. |
| 2. | Place the DSW2-4 in the ON or up position. |
| 3. | Press the LINE and FEED key while simultaneously turning ON the power switch. When the printer beeps, release the keys. The following screens will appear. |
| |  <pre> graph LR A["INITIALIZING ROM V00.00.00.00"] --> B["MAINTENANCE MODE DIPSW2-4 ON->OFF"] </pre> |
| 4. | Place the DSW-4 in the OFF position and the following screen will appear. |
| |  <pre> graph TD A["FACTORY MODE"] </pre> |
| 5. | Press the LINE key to display the next screen. |
| |  <pre> graph TD A["ALL CLEAR MODE"] </pre> |
| 6. | Press the FEED key to display the next screen. |
| |  <pre> graph TD A["ALL CLEAR COUNTER EEPROM"] </pre> |
| 7. | Press the FEED key to display the next screen. |
| |  <pre> graph TD A["COUNTER ALL CLEAR YES NO"] </pre> |
| 8. | Press the LINE key to select YES or NO . If YES is selected press the FEED key to clear the EEPROM . |
| |  <pre> graph LR A["COUNTER ALL CLEAR COMPLETED"] --> B["ALL CLEAR MODE"] </pre> |
| 9. | Power OFF the printer and confirm that all switches are in the OFF or down position. |

7.7 Sample Test Prints



LARGE TEST PRINT



SMALL TEST PRINT

ILLUSTRATIONS SHOWN ARE EXAMPLES ONLY AND MAY NOT EXACTLY MATCH YOUR OUTPUT

Section 8

Troubleshooting

8.1 Overview

This section has been devised to help you if you are unable to produce output on the M-8485Se printer. Use this section to make sure the basics have been checked before deciding you are unable to proceed further. This section covers the following:

To help you, this section has been divided into the following parts.

- *Initial Checklist*
- *IEEE1284 Parallel Interface*
- *RS232C Serial Interface*
- *Universal Serial Bus Interface*
- *LAN Ethernet Interface*
- *Error Signals*
- *Troubleshooting Tables*
- *Head Pattern Examples*

8.2 Initial Check List

1. Is the printer powered up and ON-LINE?
2. Is the ERROR light on the front panel Off? If this light is On, it may mean the Print Head Assembly or the Label Hold-Down is not closed and latched in position.
3. Are the Label and Ribbon lights on the front panel Off? If these lights are On, the labels or ribbons may be incorrectly loaded.

8.3 The IEEE1284 Parallel Interface

1. Is the IEEE1284 printer cable connected securely to your parallel port (DB25S Female) on the PC and to the Centronics connector on the printer?

WARNING: Never connect or disconnect interface cables (or use a switch box) with power applied to either the printer or the host. This may cause damage to the interface circuitry and is not covered by warranty.

2. Does the Parallel Interface cable used meet IEEE1284 specifications? If it does not and you are connected to an IEEE1284 or ECP parallel port on the computer, the printer may not be able to communicate correctly.
3. Is there more than one parallel interface port on your PC (LPT1, LPT2, etc.)? If so, make sure you are sending data out the correct port.
4. Is the IEEE1284 Interface Module installed in the printer? Older versions of the Parallel Interface module will not work correctly in the M-8485Se printers.
5. When you send the print job to the printer and it does not respond, do you get an error message on your PC that says "Device Fault" or something similar?

This may mean that the computer doesn't know the printer is there. Verify that:

- a. Both ends of the cable are securely inserted into their respective connectors.
 - b. The printer is ON-LINE.
 - c. The cable is not defective. There are other things that can cause this error message on your computer but at this stage, a defective cable may be one of the reasons.
6. When you send the print job to the printer and it does not respond and there is no error message on the PC:
 - a. Check your data stream for some of the basics. Is your job framed as follows:
<ESC>A—Data—<ESC>Z
 - b. Verify that you've included all required parameters in the data stream.

The IEEE1284 Parallel Interface (Cont)

- c. Verify the following:
 - You have not typed a "0" (zero) for an "O" (letter) or vice-versa.
 - You have not missed any <ESC> characters where they're needed.
 - Make sure all printer command codes are capital letters.
 - Your protocol codes are set for Standard or Non-Standard and data stream is consistent with these.
7. If you've checked all the above and the printer still isn't printing, you may want to try a Receive Buffer Hex Dump to determine what (if anything) the printer is receiving from your computer. See Hex Dump Mode in Section 8.10.

The Parallel port is now listening for incoming data. Send your print job. The printer will now print (only once) a Hexadecimal (Hex) Dump of everything it received from the host computer. Each 2-digit hexadecimal character represents a character the printer received. It may be tedious, but now you can analyze and troubleshoot the data stream.

WARNING: A small label may produce a large amount of data when printed in Hex Dump.

8. While checking the Hex Dump printout, look for 0D_H 0A_H (Carriage Return and Line Feed) characters throughout. The command string should be continuous. CR or LF characters are not allowed between the Start Command (<ESC>A) and the Stop Command (<ESC>Z). If you are using BASIC, it may be adding these characters automatically as the line wraps. Adding a "width" statement to your program can help to suppress these extra 0D_H 0A_H characters by expanding the line length up to 255 characters.

If you're not programming in BASIC, check to see if you have an equivalent statement in the language you're using to suppress extra carriage returns and line feeds from your data being sent out to the printer. We want the data stream to be one complete line going to the printer.

8.4 The RS232C (Serial) Interface

1. Is the RS232C Serial cable connected securely to your serial port on the PC (DB-25S Male) and to the RS232C connector on the printer?

Warning: Never connect or disconnect interface cables (or use a switch box) with power applied to either the printer or the host. This may cause damage to the interface circuitry and is not covered by warranty.

2. Is the cable defective? At the very least, you should be using a "Null Modem Cable" which crosses pins in a specific manner. This should enable your printer to print. We recommend that you use a cable built to specifications described in Section 3, Interface Specifications.
3. Is the RS232 Interface Module installed in the printer?
4. Check for obvious errors in the data stream. Is the data properly framed with the <ESC> A and <ESC>Z commands?
5. If after sending your job to the printer, it only "beeps" and displays an error message on the LCD display, you may have a configuration problem. There may be some inconsistencies with the Baud Rate, Parity, Data Bits, or Stop Bits in relation to your host computer. If you are unsure as to what the printer's current RS232 settings are, print a Configuration Test Label. It will list all of the current printer configuration settings.
6. If you are still unable to get printer output, try the Hex Dump as described Step 7 under IEEE1284 Parallel Interface Troubleshooting. In this case, the printer monitors the RS232C interface for incoming data.
7. From the Hex Dump, if you are seeing extra 0D_H 0A_H (CR and LF) characters, and are using BASIC, refer to the beginning of the Command Code section in the Operator and Technical Reference Manual.

8.5 The Universal Serial BUS (USB)

If nothing prints when doing a test print you will need to verify that the device drivers have been successfully installed by doing the following:

1. Click on Start, then Settings and then Control Panel.
2. Within the new Window, you should have an Icon listed as System. Double click on this.
3. Click on the Device Manager tab.
4. Make sure that the View Device by type is checked. Scroll down until you get to SATO-USB device.
5. Verify that it does not have any errors next to it. If it shows an error, remove the device and then reinstall it.
6. Reboot the PC and the Printer.
7. Consult the Windows 98 Troubleshooting guide or contact technical support for further assistance.

8.6 The LAN Ethernet Interface

Printer Does Not Come UP Ready

If you cannot print to the print server after you install it, check the following:

1. Make sure that the printer is powered on, that all cables are securely plugged in, and that the printer is on-line.
2. If possible, connect a terminal to the serial port. If you see the boot prompt, the print server firmware has not been loaded properly. If reloading does not fix the problem, try setting switch 1 to ON (factory defaults) and powering the print server off and then on again. If the problem persists, the product may be defective.

Installation Problems (Printer Comes Up Ready but You Cannot Print)

If the printer starts up OK but you cannot print, the problem could be one of the following:

- There is a problem with the interface between the print server and the printer.
- There is a problem with the network connection or cabling.
- There is a queue setup problem, a print server setup problem, or other protocol-related problem.

Checking the Interface between the Print Server and the Printer

First make sure that the cable between the print server and the printer is securely plugged in at both sides. Then:

Wait about two minutes after the printer is powered on and then run a printer self-test (*see Section 2 Configuration for information on how to run the self test*).

- If the self-test does not print, then there is probably a hardware problem. Double check the connections.
- In some rare instances, disabling NBUF with the command SET PORT P1 NBUF DISABLED will solve port compatibility issues.

Checking the Network Connection and Cabling

If the self-test page prints but you cannot print documents, first check the network connection and cabling.

1. If you are connecting to a 10baseT network, verify that the OK LED is on. If the appropriate LEDs are not on, there is probably a bad 10baseT or 100baseTX cable or the hub port is bad. If possible, try a different cable and hub port, or try connecting a different device (such as a PC) to the cable.
2. If you are using a repeater or hub, make sure that SQE (heartbeat) is turned off at the hub (this is the default setting for most hubs). Also, if you have a hub or multiport repeater, verify that the hub or repeater port is good by trying the print server on a different port.

The LAN Ethernet Interface (Cont)

3. If you have a bridge or router located between the print server and the host computer, make sure that the device is set up to allow the print server to send and receive data from the host. For example, a bridge can be set up to only allow certain types of Ethernet addresses to pass through (a process known as filtering); therefore, such a bridge must be configured to allow print server addresses. Likewise, a router can be set up to pass only certain protocols, so be sure that the desired protocol can be passed through to the print server. In the case of routers, also make sure that the protocol is routable (LAT, NetBEUI, and DLC/LLC are not routable).
4. Make sure that you are not trying to perform an illegal operation, such as attempting to print a label larger than the printer can handle.
5. Check the individual protocol troubleshooting sections in this chapter for additional causes of intermittent printer problems.

Intermittent Problems

If the print server and the printer start up OK, but you intermittently have problems printing, check the following:

1. Excessive NetWare polling can be a big cause of intermittent problems. Make sure that you have only enabled the NetWare file servers that you need for printing (do a SHOW NETWARE command from the print server console to see the enabled file servers). If you have V3.21 or earlier firmware, make sure that NetWare polling is disabled by using the console command SET NETWARE RANGE 0. If you are not using NetWare, you can disable NetWare entirely with the command SET NETWARE DISABLED.
2. Check the individual protocol troubleshooting sections in this chapter for additional causes of intermittent printer problems.

TCP/IP Troubleshooting

If you are using TCP/IP and cannot print to the print server and you have checked the hardware and network as described in the previous steps, then check the following, *(Note that it is always a good idea to try creating another print queue to eliminate the possibility of setup errors):*

1. The problem may be the result of mismatched or duplicate IP addresses. Verify that the IP address is correctly loaded into the XCD print server (via the self-test page or through the remote console) and make sure that no other nodes on the network have this address, (Duplicate IP addresses are the biggest cause of TCP/IP printing problems). If the address is not correct, then check whether the loading procedure was properly executed.
2. If you used NCP, XCONFIG, or ccr to enter the IP address, make sure that you exited the remote console properly with a CTRL-D or EXIT command.
3. If you used rarp, make sure that you started the rarp daemon using the rarpd, rarpd -a, in.rarpd -a or equivalent command. Verify that the /etc/ethers file contains the correct Ethernet address and that the print server name matches the name in the /etc/hosts file.
4. If you used bootp, make sure that bootp is enabled (i.e., the "#" is removed from the bootp entry) in the /etc/inetd.conf file. Verify that /etc/bootptab file is correctly configured.

The LAN Ethernet Interface (Cont)

5. Also verify that the host computer and the print server are either on the same subnet (for example, if the print server has a subnet mask of 255.255.255.0, the host must have the same subnet mask) or that the router is properly configured to pass data between the two devices.
6. Make sure that the `/etc/printcap` file (if applicable) is typed in correctly. In particular, look for missing ":" and "\" characters, because a small error anywhere in the file can have major consequences. Also check the `/usr/spool` directory to make sure that you have created a valid spool directory.
7. If you are using a Berkeley-based UNIX, make sure that the daemon is started on Berkeley based systems with the command `lpc start printer`, where *printer* is the name of the local print queue.
8. If you are using an AT&T-based UNIX, make sure the printer is enabled (enable *printer*, where *printer* is the name of the local print queue).
9. Make sure that the `lpr/lpd` remote line printer service are running on the host computer (refer to your host computer documentation for information on how to do this).
10. If you cannot print from DEC TCP/IP Services for VMS (UCX), make sure that you have version 2.0B or later of this software, because earlier versions will not work with the print servers.
11. If jobs are run together or do not eject from the printer, try setting the service (remote printer) with EOT set to the appropriate printer reset string. This string is number 4 (%-12345X) for all newer HP printers. For example:

```
SET SERVICE BINARY_P1 EOT 4
```
12. If the lines of a text file are staggered, make sure that you have specified a remote printer (rp) name of TEXT in your `/etc/printcap` file.
13. If you are having trouble printing long jobs (over 1MB) add the line `mx#0` to your `/etc/printcap` file entry.
14. If you are using the raw TCP port and are experiencing intermittent queue stalling problems, make sure that queueing is enabled on the service (do a `SHOW SERVICE` command from the remote console and note if "Q" is listed in the OPT column for the desired service). If it is not, enable queueing with the command `SET SERVICE servicename QUE ENA` command.
15. If the wrong IP address is loaded, check your network for file servers that have DHCP, BOOTP, or rarp enabled and make sure that these file servers are not set up to load IP addresses into the print server. Also make sure that you do not use the command `SET IP BOOT 0` to disable TCP/IP broadcasts; instead, you should use the command `SET IP METHOD STATIC` (unpredictable results will occur otherwise).

The LAN Ethernet Interface (Cont)

16. If you have problems with queues locking up when the active print job is deleted, try setting the IP timeout to one minute with the console command SET IP TIMEOUT 1.
17. There were a number lpr/lpd-related problems fixed the V3.46 firmware. Therefore, if you are experiencing intermittent queue problems and you have an older version of firmware, SATO recommends you upgrade to 3.46 or later.

Netware Troubleshooting

If you cannot print from NetWare and you have checked the hardware and network as described in the previous steps, first verify that the print server is attached to the server queue by going to PCONSOLE, selecting PRINT QUEUE INFORMATION, and then CURRENTLY ATTACHED SERVERS. If the print server does not appear in the list of attached servers, then check the following. (Note it is always a good idea to try deleting and recreating the print server and creating a new print queue in order to eliminate the possibility of setup errors.)

1. If you cannot create a print queue, make sure you have sufficient NetWare privileges. With NetWare 3.12 and earlier, you MUST be logged in as SUPERVISOR (not someone with Supervisor privileges). If you are having problems creating queues with NetWare 4.xx and later, try logging in as ADMIN. Also make sure you are not trying to run XAdmin32 with Microsoft NetWare client (you must use the Novell 32-bit client).
2. If you changed the login password, you must change the password in both the print server (using the SET NETWARE PASSWORD command) and in the file server (using the PCONSOLE Print Server Information Change Password command).
3. Make sure you have enabled at least one NetWare file server using the SET NET WARE SERVER *servername* ENABLED command.
4. Have you exceeded your NetWare user limit?
5. If you have V3.00 or earlier firmware, make sure you enable either 802.3 or Ethernet II frames on your file server, particularly if you have a NetWare 3.12 or 4.xx file server (since these NetWare versions default to 802.2) since these versions of firmware do not support 802.2 or SNAP frames. Also, if you are using NetWare 4.xx make sure you have enabled binary emulation on the file server.
6. Make sure the print server name you used in PCONSOLE exactly matches the name that is configured in the print server and make sure it is defined as a Queue Server for the print queue.
7. If you are running both 802.3 and Ethernet II frames on different file servers on your network, there is a possibility that the print server may not make a connection to the desired file server. Try forcing the frame type to the desired one using the SET NETWARE FRAME command from the print server remote console.
8. If you are losing portions of your print job and you are using the DOS NetWare drivers, try setting the TIMEOUT parameter in your CAPTURE statement to a higher value, (at least 50 seconds for Windows).

The LAN Ethernet Interface (Cont)

Windows NT/LAN Server Troubleshooting

If you are having trouble printing with Windows NT or LAN Server, check the following:

1. Make sure you can print from the print server using DOS or OS/2 comand PRINT ipaddress, where ipaddress is the IP address of the print server. If you cannot print from the print server you will not be able to print.
2. Make sure TCP/IP and lpr printing are installed and running on the Windows NT system or the LAN Server file server.
3. If you are having problems printing to the print server from a client PC that is connected to a Windows NTAS or LAN Server, verify that you can print a job directly from the DOS or OS/2 prompt on the file server. If you can print from the file server but not from the client, then the problem is probably with the NetBEUI communications rather than with the TCP/IP link to the print server. Check your file server network setup (for example, make sure you can print from the client to other printers on the network).
4. If you have problems with Windows NT queues locking up when the active print job is deleted, try setting the IP timeout to one minute with the console command SET IP TIMEOUT 1.
5. There were a number of lpr/lpd-related problems fixed in the V3.46 firmware. Therefore, if you are experiencing intermittent queue problems and you have an older version of firmware, SATO recommends that you upgrade to 3.46 or later.

Windows 95/98 Peer-to-Peer Troubleshooting

If you are having trouble printing on a Windows 95 Peer to Peer Network, check the following:

1. If the print server does not show up under JetAdmin on a Windows 95/98 Peer-to-Peer network, try removing all of the Windows 95 network software from the Network control panel and then reinstalling them as follows:
 - First install the **IPX/SPX-Compatible Protocol**, the **Client for Microsoft Networks**, and the network adapter card driver.
 - Restart the system and then add the **HP JetAdmin** service.
2. Because of the many changes that have been incorporated in Windows 95/98 Peer-to-Peer printing since its introduction, it is a good idea to upgrade to the latest version of JetAdmin (available on the HP web site at <http://www.hp.com>).

8.7 Error Signals

The LCD display, Front Panel LED Indicators and Buzzer provide a visual/audio indication of the type of error encountered.

| LED | LCD Message | Audible Beep | Error Condition | To Clear |
|------------------------------|------------------|--------------|-------------------------------------|---|
| Error On | Machine Error | 1 Long | Machine Error | Cycle Power ON/OFF |
| Error On | EEPROM Error | 1 Long | EEPROM Read/Write | Cycle Power ON/OFF |
| Error On | Head Error | 1 Long | Print Head is damaged | Replace Print Head Cycle Power ON/OFF |
| Error On | Sensor Error | 3 Short | Sensor | Cycle Power ON/OFF |
| Error Blinks | Card R/W Error | 1 Long | Memory Card Read/Write | Format Memory Card Cycle Power ON/OFF |
| Error Blinks | Card Low Battery | 1 Long | Memory Card Battery Low | Replace MC Battery Cycle Power ON/OFF |
| Error Blinks | Head Open | 3 Short | Head Open | Close Head Lever |
| Error On Line Blinks | Parity Error | 3 Short | RS232 Parity Error | Correct parity to match system |
| Error On Line Blinks | Overrun Error | 3 Short | RS232 Overrun Error | Verify RS232 Settings |
| Error On Line Blinks | Framing Error | 3 Short | RS232 Framing Error | Verify RS232 Settings |
| Error On Line Blinks | Buffer Over | 3 Short | Buffer Overflow | Verify RS232 Settings |
| Error On Line Blinks | Paper End | 3 Short | Media End or Misselected Media Type | Replenish Media Select Correct Media Type Open/Close Head Lever Open/Close Media Hold Down |
| Error Blinks Ribbon On | Ribbon End | 3 Short | Ribbon End Ribbon Broken | Replace Ribbon Open/Close Head Lever Open/Close Media Hold Down |
| Error Blinks Label Blinks | Media Error | 3 Short | Media Error | Open/Close Head Lever |
| Ribbon Blinks | | None | Ribbon Near End | Replace ribbon with full roll |
| Line Blinks | | None | Buffer Near Full | Slow down transmission rate |

8.8 Troubleshooting Tables

The troubleshooting table below includes the following general symptoms descriptions:

- Image Voids
- Ribbon Wrinkle
- Light Images
- Smearing
- No Ribbon Movement
- No Label Movement
- No Printed Image
- Display Problem
- POWER LED not on
- ERROR LED on
- ON LINE LED not on
- No Label Drive

Print Quality Problems

| Symptom | Probable Cause | Suggested Corrective Action |
|----------------|-----------------------------------|---|
| Image Voids | Poor quality labels | Use thermal transfer compatible stock |
| | Poor quality ribbons | Use genuine SATO ribbons |
| | Ribbon not matched to label stock | Check with media suppliers |
| | Damaged electronics | Replace circuit board (Sec. 6.4) |
| | Damaged platen | Replace platen |
| Ribbon Wrinkle | Poor head alignment | Adjust head balance (Sec. 5.4) Adjust ribbon roller Adjust head alignment |
| | Poor ribbon tension | Adjust ribbon tension (Sec. 5.2) |
| | Worn platen | Replace platen (Sec. 6.16) |
| | Foreign material on head/platen | Clean head and platen |
| | Foreign material on labels | Use high quality label stock |
| | Damaged print head | Replace print head (Sec. 6.18) |
| Light Images | Poor quality labels | Use thermal transfer compatible stock |
| | Poor quality ribbons | Use genuine SATO ribbons |
| | Low print head energy/darkness | Adjust darkness control (See Operator Manual) |

Print Quality Problems

| Symtom | Probable Cause | Suggested Corrective Action |
|--------------------|---|---|
| Light Images | Low print head pressure | Adjust head balance (Sec. 5.4) |
| | Ribbon not matched to label stock | Use Premier II ribbon with a "1C" thermal transfer ribbon stock or equivalent for optimum results |
| | Low ribbon drive torque No ribbon movement | Adjust ribbon drive clutch (Sec. 5.2) |
| | Foreign material on head | Clean head and platen |
| | Poor head alignment | Align print head (Sec. 5.5) |
| | Excessive print speed | Reduce print speed setting |
| Smearing | Poor quality labels | Use high quality label stock |
| | Poor quality ribbons | Use genuine SATO ribbons |
| | Foreign material on head/platen | Clean head and platen |
| | Foreign material on labels | Use high quality label stock |
| | Excessive print head energy | Adjust darkness control |
| | Excessive print speed | Adjust print speed |
| | Excessive head pressure Carbon tension wrong | Adjust head balance (Sec. 5.4) |
| No Ribbon Movement | Incorrect ribbon core size | Use genuine SATO ribbons |
| | Loose drive clutch | Adjust drive clutch tension (Sec. 5.2) |
| | Loose platen drive belt | Adjust/replace belt (Sec. 6.9) |
| | No +24 volt output | Test power supply and replace if required (Sec. 6.3) |
| | Damaged electronics | Replace circuit board (Sec. 6.4) |

Print Quality Problems

| Symtom | Probable Cause | Suggested Corrective Action |
|--|--|--|
| No Label Movement | Loose/broken platen drive belt | Adjust/replace belt (Sec. 6.9) |
| | Incorrect label pitch sensor selected | Select correct label sensor type (DSW2-2) |
| | No +24 volt output | Replace fuse on main PCB (Sec. 6.2) Test power supply and replace if necessary (Sec. 6.3) |
| | Loose set screw on platen pulley/stepper motor | Tighten set screws |
| No Printed Image | Print head not connected | Verify print head connector fully seated at head and main PCB (Sec. 6.18) |
| | Ribbon upside down | Use genuine SATO ribbons |
| | No + 24 volt output | Test power supply and replace if necessary (Sec. 6.3) |
| | Damaged print head | Replace print head (Sec. 6.18) |
| | Damaged electronics | Replace circuit board (Sec. 6.4) |
| Back light but no words on display or no display | The most likely cause is the ribbon cable has fallen out or not seated fully into connector. | Verify that the cable and connector are properly seated. Display POT not positioned properly. |
| POWER LED not on | AC power cable not connected | Verify that the cable is connected to the printer and the AC outlet |
| | Main power fuse defective | Replace fuse (Sec. 6.2) |
| | Defective power supply | Test power supply and replace if defective (Sec. 6.3) |
| ERROR LED on | Head not locked | Close and latch head release |
| LABEL LED on | Label supply roll empty | Replenish label supply |
| | Label stock not routed through sensor | Reload labels |
| | Label sensor not positioned correctly | Adjust sensor position |

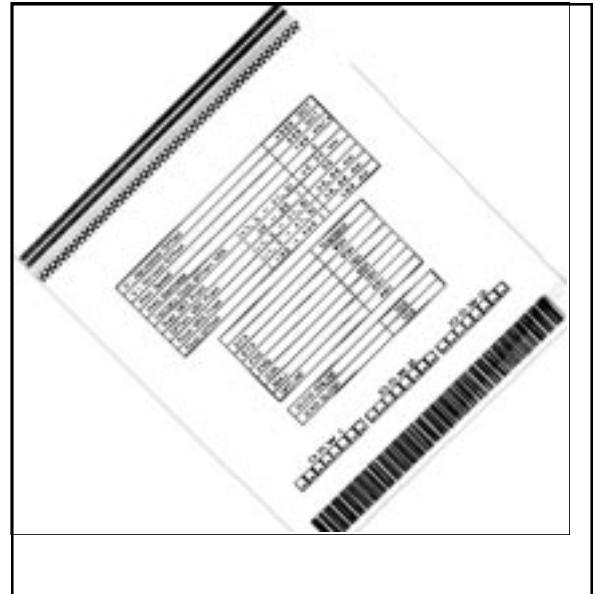
Print Quality Problems

| Symtom | Probable Cause | Suggested Corrective Action |
|------------------|--|--|
| LABEL LED On | Label sensor blocked | Clean label sensor |
| | Incorrect label sensor threshold setting | Adjust label sensor threshold (Sec. 4.3 & 4.4) |
| | Platen drive malfunction | See Section 6.16 |
| Ribbon LED on | Ribbon supply roll empty | Replenish ribbon supply |
| | Ribbon supply out of alignment | Realign ribbon sensor |
| | Ribbon sensor blocked | Clean ribbon sensor |
| | No cardboard core on ribbon rewind | Use cardboard core on ribbon rewind |

8.9 Head Pattern Examples



FACTORY DEFAULT



**GOOD ADJUSTMENT
CLEAR, DARK,
EVEN TEXT**

**FEED
DIRECTION**



**POOR HEAD
ALIGNMENT, BALANCE
OUT OF ADJUSTMENT**



**POOR HEAD
ALIGNMENT, BALANCE
OUT OF ADJUSTMENT**

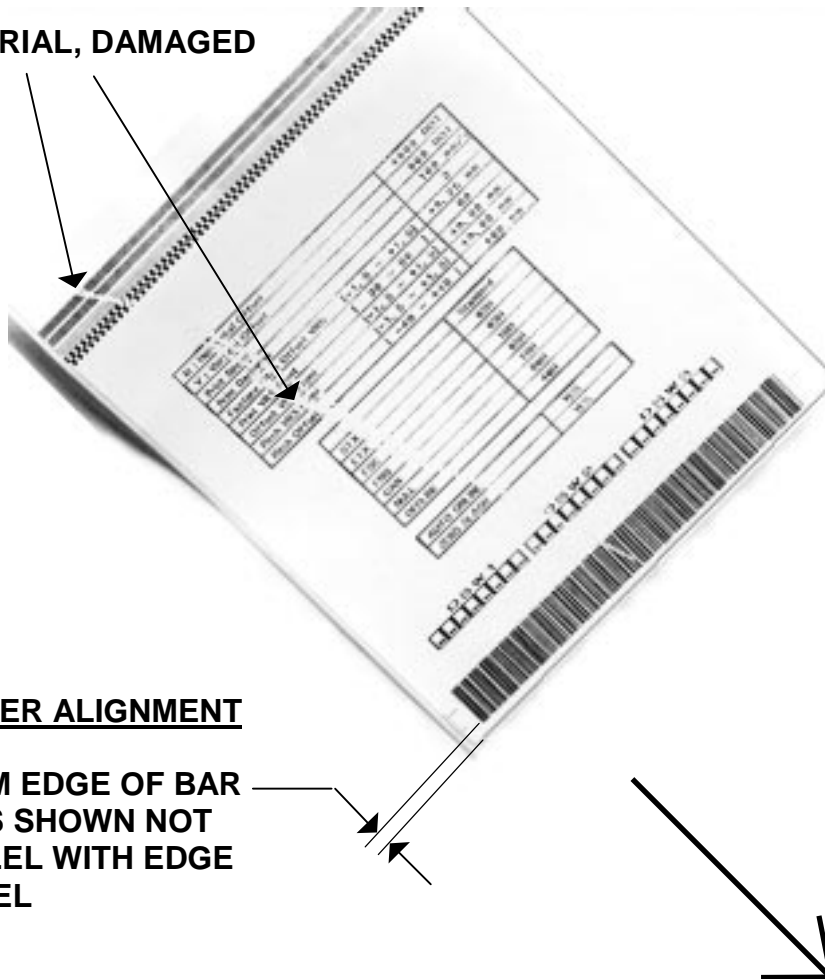
**IRREGULAR UNEVEN
TEXT**

**ILLUSTRATIONS SHOWN ARE EXAMPLES
ONLY AND WILL NOT EXACTLY MATCH
YOUR OUTPUT**

Head Pattern Examples

DIAGONAL VOIDS (WHITE STREAKS) THAT “WALK” ACROSS LABEL

RIBBON WRINKLE
POOR HEAD ALIGNMENT, POOR
RIBBON TENSION,
WORN PLATEN,
FOREIGN MATERIAL, DAMAGED
PRINT HEAD



IMPROPER ALIGNMENT

BOTTOM EDGE OF BAR
CODE IS SHOWN NOT
PARALLEL WITH EDGE
OF LABEL

FEED
DIRECTION

8.10 Hex Dump Diagnostic Labels

In addition to the User Test Print Labels, the printer contents of the receive and print buffers can be examined using the Hex Dump Test Labels.

Print Buffer Hex Dump

The contents of the Print Buffer can be examined using the Hex Dump mode. The label numbers each line of data received in the left hand column, the data in hexadecimal format in the center columns, followed by the same data in ASCII format in the right hand column.

| STEP | PROCEDURE |
|------|---|
| 1. | Turn on the printer. |
| 2. | Send and print a label. |
| 3. | Place the printer in the Off-Line mode by pressing the LINE key. The LINE LED should go out. |
| 4. | Place DSW2-4 in the On position. |
| 5. | Press the LINE key to place the printer back On-Line. |
| 6. | Press the FEED key. |
| 7. | A label should be printed containing the contents of the print buffer in Hexadecimal format. |
| 8. | Return DSW2-4 to the Off position. |
| 9. | Turn the printer off and then back on to place it back in the normal print mode. |

Receive Buffer Hex Dump

The data that is being received by the printer (before it is placed in the Print Buffer) can be examined by using the Hex Dump Mode. The label numbers each line of data received in the left hand column, the data in hexadecimal format in the center columns, followed by the same data in ASCII format in the right-hand column.

| STEP | PROCEDURE |
|------|--|
| 1. | Turn off the printer. |
| 2. | Place DSW2-4 in the On position. |
| 3. | Turn on the printer. |
| 4. | Transmit the data to the printer. |
| 5. | The data received is printed on a label in hexadecimal format. |
| 6. | Return DSW2-4 to the Off position. |
| 7. | Turn the printer off and then back on to place it back in the normal print mode. |

Section 9

Optional Accessories

9.1 Overview

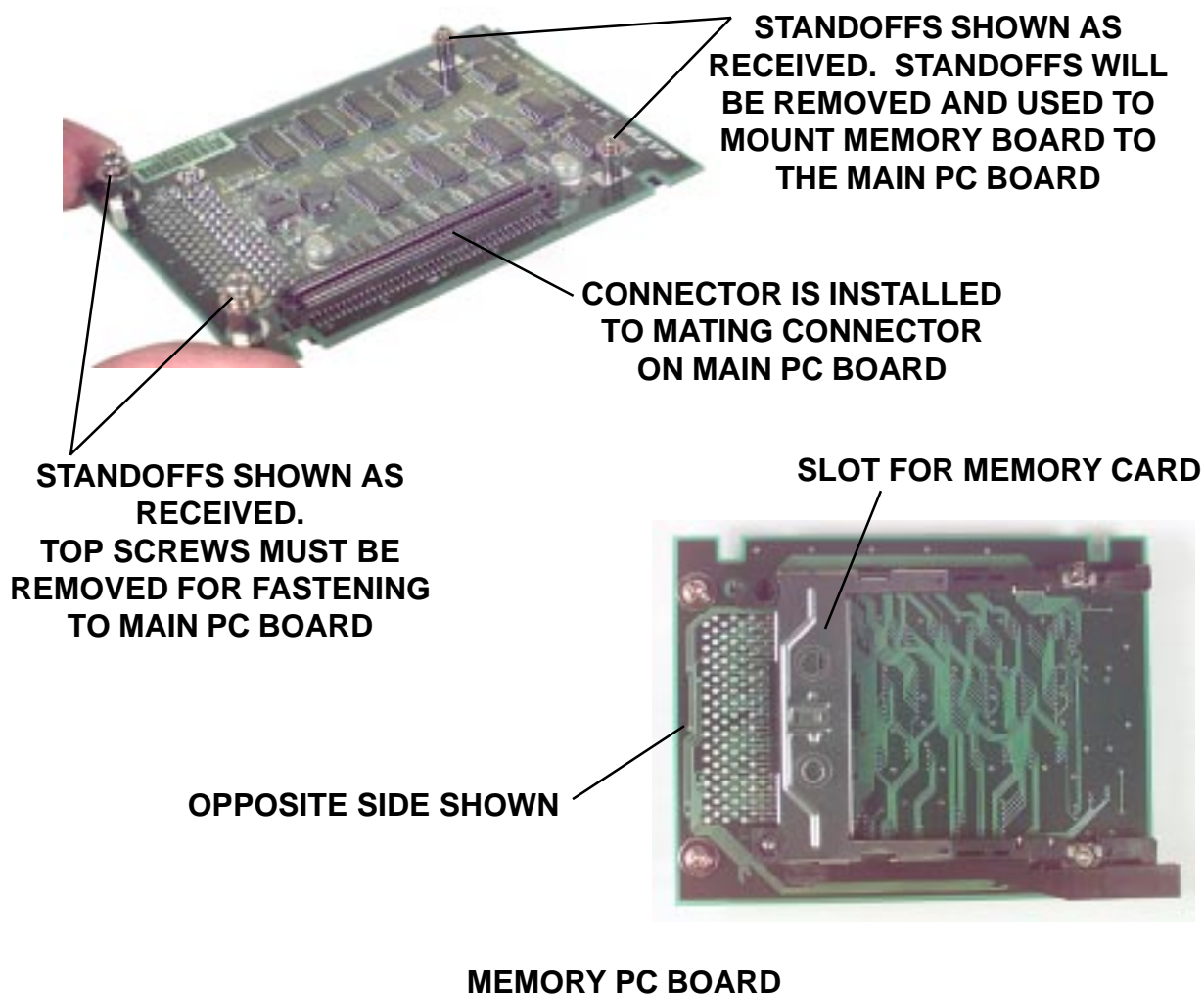
This section contains instructions for installing the following optional accessories:

- *Memory PC Board for PCMCIA Memory Cards*
- *Flash Memory Module*
- *Face Out Label Sensor (Factory Installed Option)*

9.2 Memory PC Board

The Memory PC Board provides the interface board for (1) PCMCIA memory card slot. PCMCIA memory cards are not provided with the Memory PC Board.

| | |
|---------------------------|--|
| Applicable Specifications | PCMCIA Version 2.1 (JEIDA Version 4.1) |
| Size | Up to 4MB SRAM Up to 16MB Flash |
| Connector Pins | 68 |
| Battery | Approximately two years (manufacturer dependent) |
| Write Protect | Yes |
| Low Battery Detect | Yes |



9.3 Memory PC Board Installation

The Main PC Board must be removed from the printer to install the Memory PC Board. Refer to Section 6.4 to remove the Main PC Board and set aside for installing the Memory PC Board.

NOTE: Many of the components on this board are susceptible to damage by static electricity. To avoid damage from static electricity, do not unpack new circuit boards from anti-static bags until instructed to do so and use a wrist grounding strap.

*** Continue here after you have removed the Main PC Board from your printer.**

| STEP | PROCEDURE |
|------|---|
| 1. | Remove (2) screws, nuts and standoffs from the Memory PC Board for mounting to the Main PC Board. Fig. 9-1 |
| 2. | Remove (2) screws and washers as shown in Fig. 9-1 for installing to the Main PC Board. Do not remove standoffs themselves. |
| 3. | Refer to Fig. 9-2 for installation location on Main PC Board. Insert the (2) screws through the Main PC Board and into the standoffs as shown in Fig. 9-3 |
| 4. | Place the Memory PC Board down over the Main PCB Board so the the connectors mate and the standoffs are aligned with the mounting holes through the standoffs. Fig. 9-3 |
| 5. | Secure one end of the Memory PC Board with (2) screws previously removed and the opposite end from the underside of the Main PC Board with (2) ea. screws and washers previously removed. Fig. 9-3 |
| 6. | Reinstall the completed Main PCB assembly to the printer reversing the Steps prior to the Memory Board installation. |
| 7. | Complete the Factory Reset Procedure 9.6 |

Memory PC Board Installation

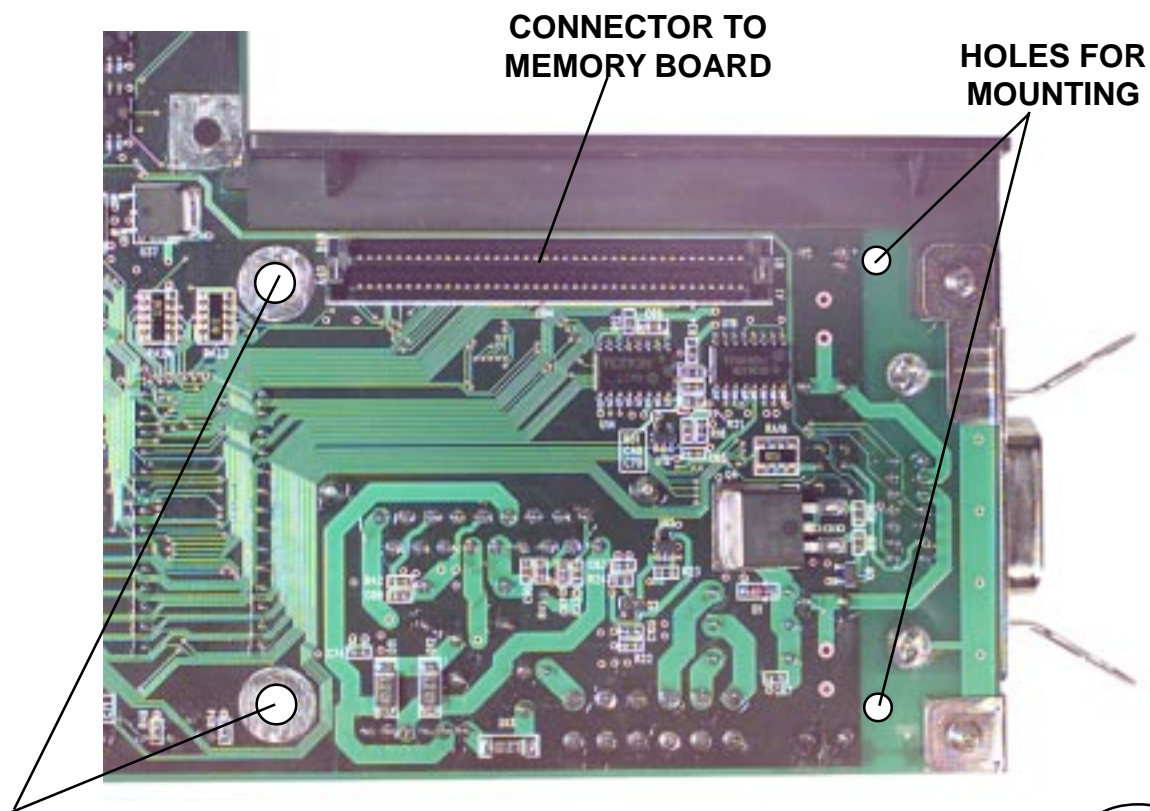
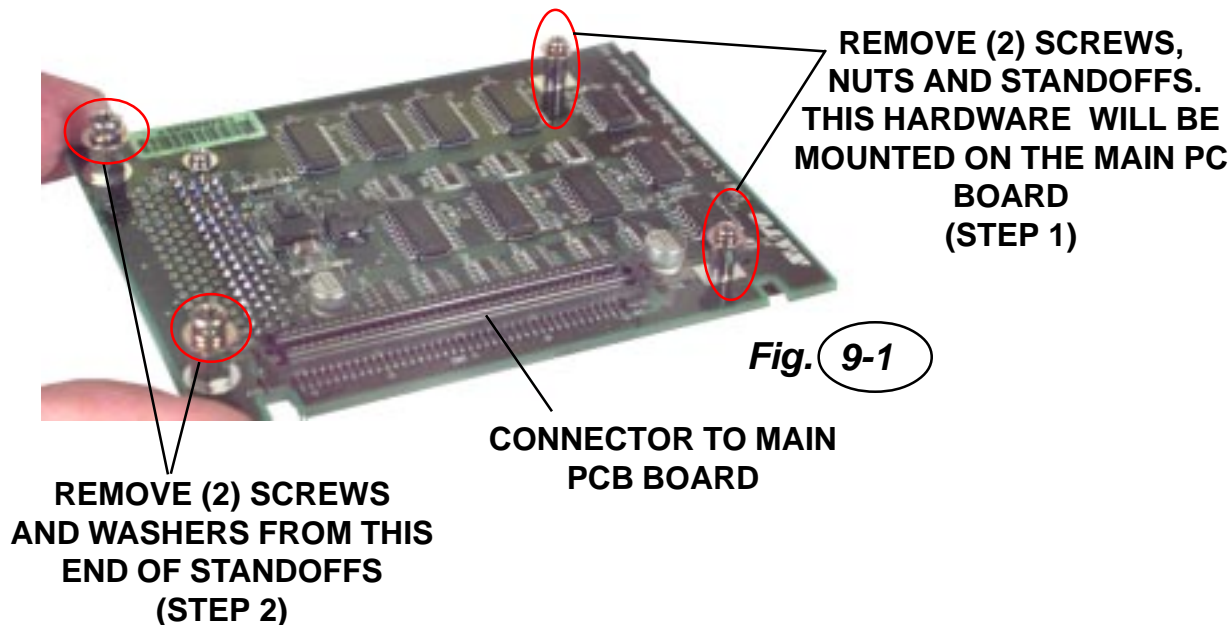
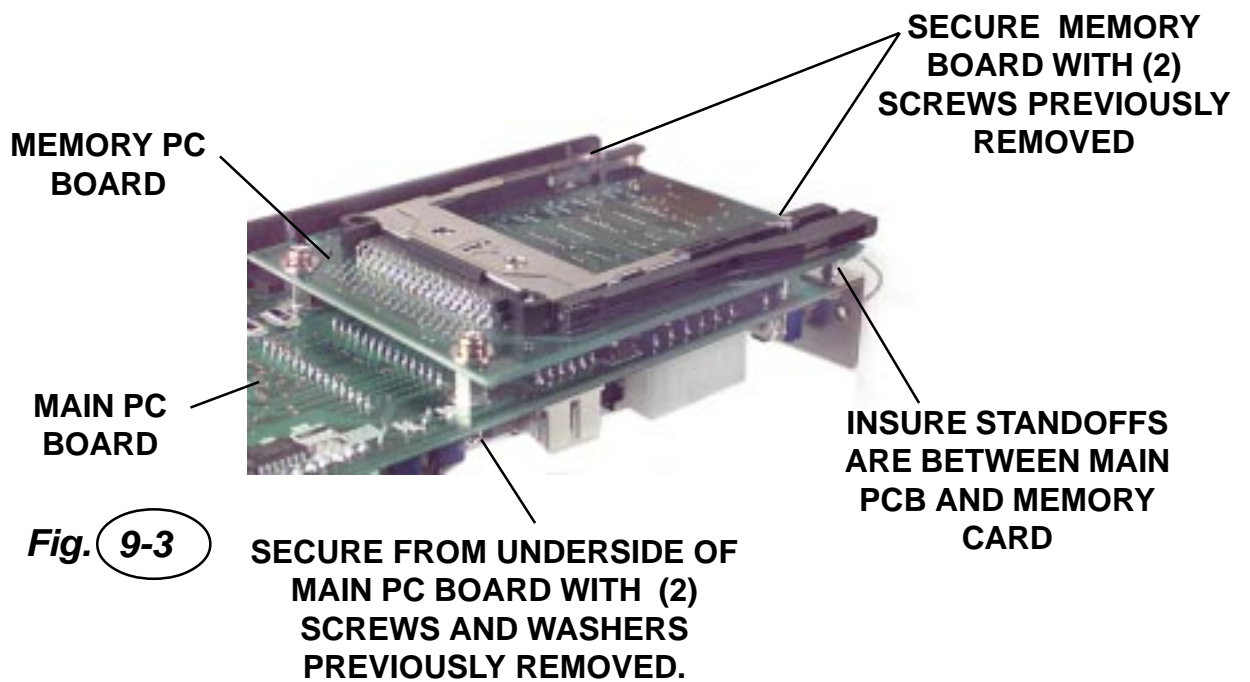


Fig. 9-2

MAIN PC BOARD SHOWING WHERE THE MEMORY BOARD WILL BE INSTALLED

Memory PC Board Installation



9.4 Flash Memory Module Installation

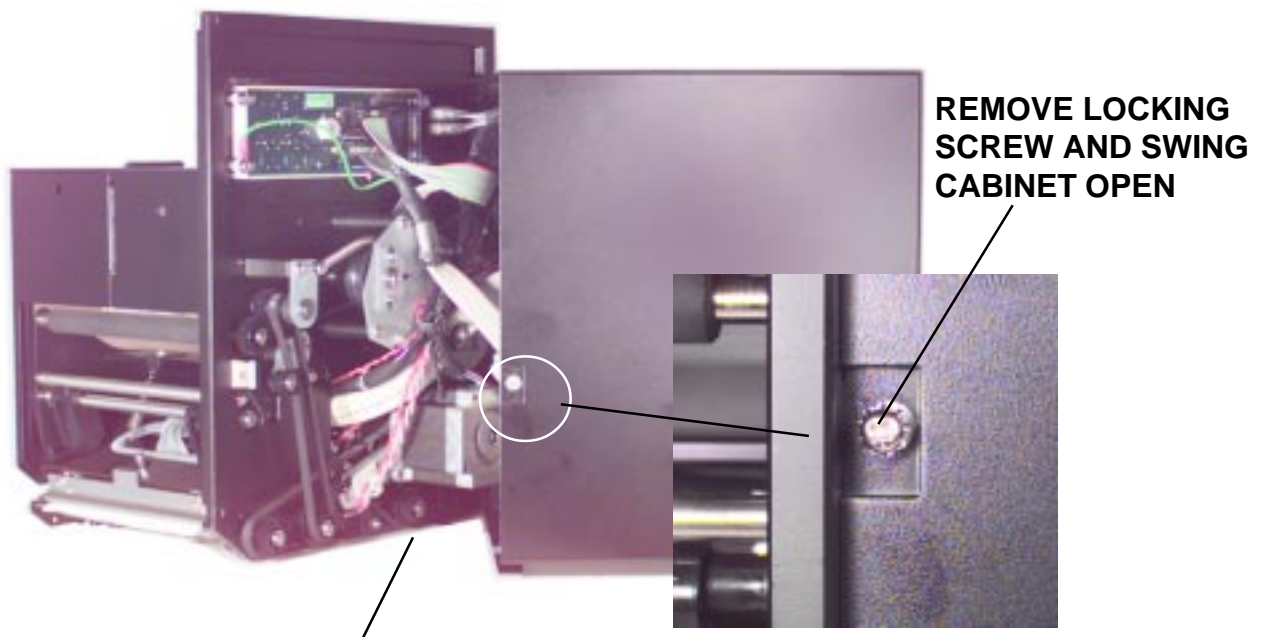
NOTE: Many of the components on this board are susceptible to damage by static electricity. To avoid damage, do not unpack new circuit boards from anti-static bags until instructed to do so and use a wrist grounding strap.

| STEP | PROCEDURE |
|------|--|
| 1. | Switch the printer OFF and disconnect the power cable. |
| 2. | Remove (5) screws securing the back panel to the cabinet. Fig. 9-4 |
| 3. | Remove screw from cabinet side to allow printer halves to swing open for access to the inside of the printer. Fig. 9-5 |
| 4. | Reach inside cabinet and carefully press outward on the tabs on both ends of the Main PC Board Memory Frame to release the Standard Memory PCB. The Standard Memory PCB should lift by itself when released. Remove the Memory PCB from the frame. Note the indexing notches. Figs. 9-6 |
| 5. | Remove the Flash Memory Module from the anti-static bag handling the module by the edges. Note the indexing notches. Insert the module into the Main PCB Memory Frame at approximately 45° away from the Main PCB Board. Gently push down to snap into position. Figs. 9-6 & 9-7 |
| 6. | Reinstall the back panel and replace screw from cabinet side. |
| 7. | Complete the Factory Reset Procedure 9.6. |

Flash Memory Module Installation

REMOVE (5) SCREWS TO
DETACH BACK PANEL

Fig. 9-4



REACH INSIDE CABINET AND
DETACH STANDARD MEMORY
PCB FROM THE MAIN PCB
MEMORY FRAME. SEE FIGS. 3

Fig. 9-5

Flash Memory Module Installation

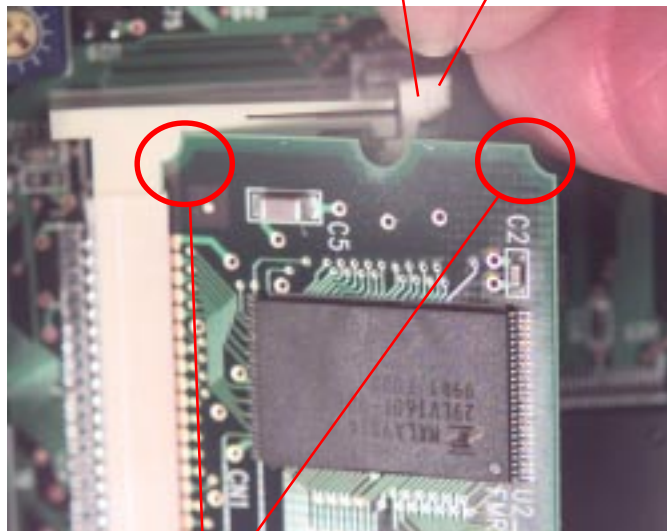
*** CAREFULLY PRESS OUTWARD ON
TABS ON BOTH ENDS OF THE FRAME
TO RELEASE THE MEMORY PCB.**

**STANDARD MEMORY
PCB IN THE MAIN PCB
MEMORY FRAME**

*** PRESS OUTWARD**



*** PRESS OUTWARD**



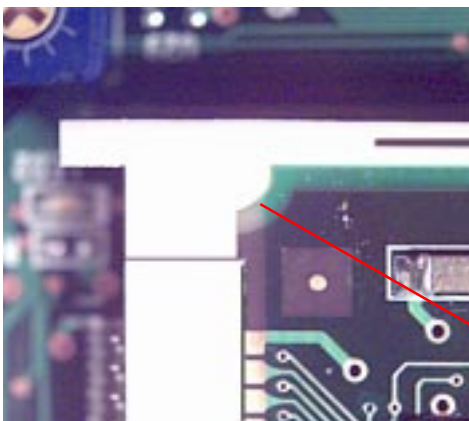
INDEXING NOTCHES



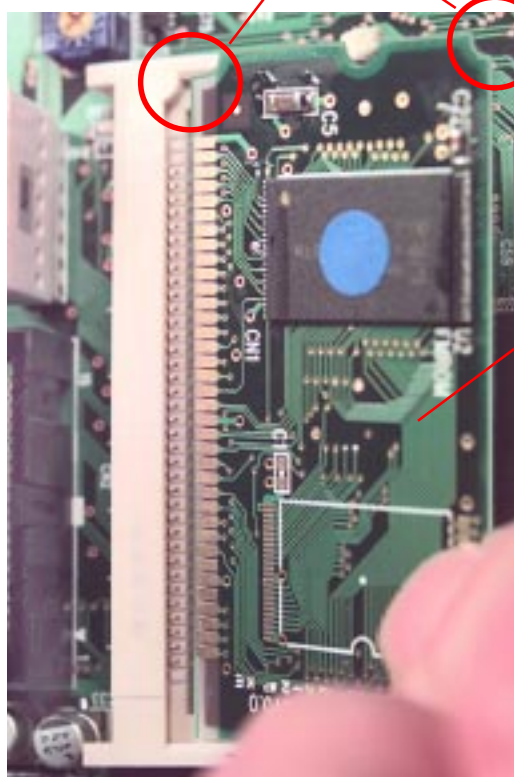
Figs. 9-6
NO NOTCH ON THIS SIDE

FLASH MEMORY MODULE

Flash Memory Module Installation



INDEXING NOTCHES



APPROXIMATELY
45° ANGLE

INSERT THE FLASH MEMORY
MODULE INTO THE MAIN PCB
MEMORY FRAME AT
APPROXIMATELY 45°. NOTE THE
INDEXING NOTCH ON THE
MODULE. GENTLY PUSH DOWN TO
SNAP INTO POSITION

Figs. 9-7

9.5 Face-Out Label Sensor

Factory installed option. Top-mounted sensor for reflective "Eye-Marks" printed on the face of the label.

9.6 Factory Reset Procedure

To reset the printer to the factory settings, perform the following steps.

Caution: *Resetting the printer will clear all registers.*

| STEP | PROCEDURE |
|------|---|
| 1. | Record all current dip switch positions, then place all switches in the OFF position. |
| 2. | Place the DSW2-4 in the ON or up position. |
| 3. | Press the LINE and FEED key while simultaneously turning ON the power switch. When the printer beeps, release the keys. The following screens will appear. |
| | <div>INITIALIZING</div> <div>ROM V00.00.00.00</div> <div>MAINTENANCE MODE</div> <div>DIPSW2-4 ON->OFF</div> |
| 4. | Place the DSW2-4 in the OFF position and the following screen will appear. |
| | FACTORY MODE |
| 5. | Press the FEED key to display the next screen. |
| | COUNTER CLEAR |
| | NONE |
| 6. | Press the LINE key once to change the message from NONE to ALL . |
| | COUNTER CLEAR |
| | ALL |
| 7. | Press the FEED key to clear the EEPROM. After a pause, the next screen will appear. |
| | PRINT SIZE |
| | SMALL LARGE |
| 8. | Select the print label size by pressing the LINE key. The default is LARGE. |
| 9. | Press the FEED key for a test print. Press the FEED key again to stop printing. |
| | <div>TEST PRINT</div> <div>PRESS FEED KEY</div> <div>Warning: This test activates all the heating elements on the print head and therefore should be used for testing purposes only with full width labels to avoid damaging the print head.</div> |
| 10. | Verify that the counters on the test print have reset to 0.0 km. |
| 11. | Power OFF the printer and confirm that all switches are in the OFF or down position. |

Spare Parts List

Section 10

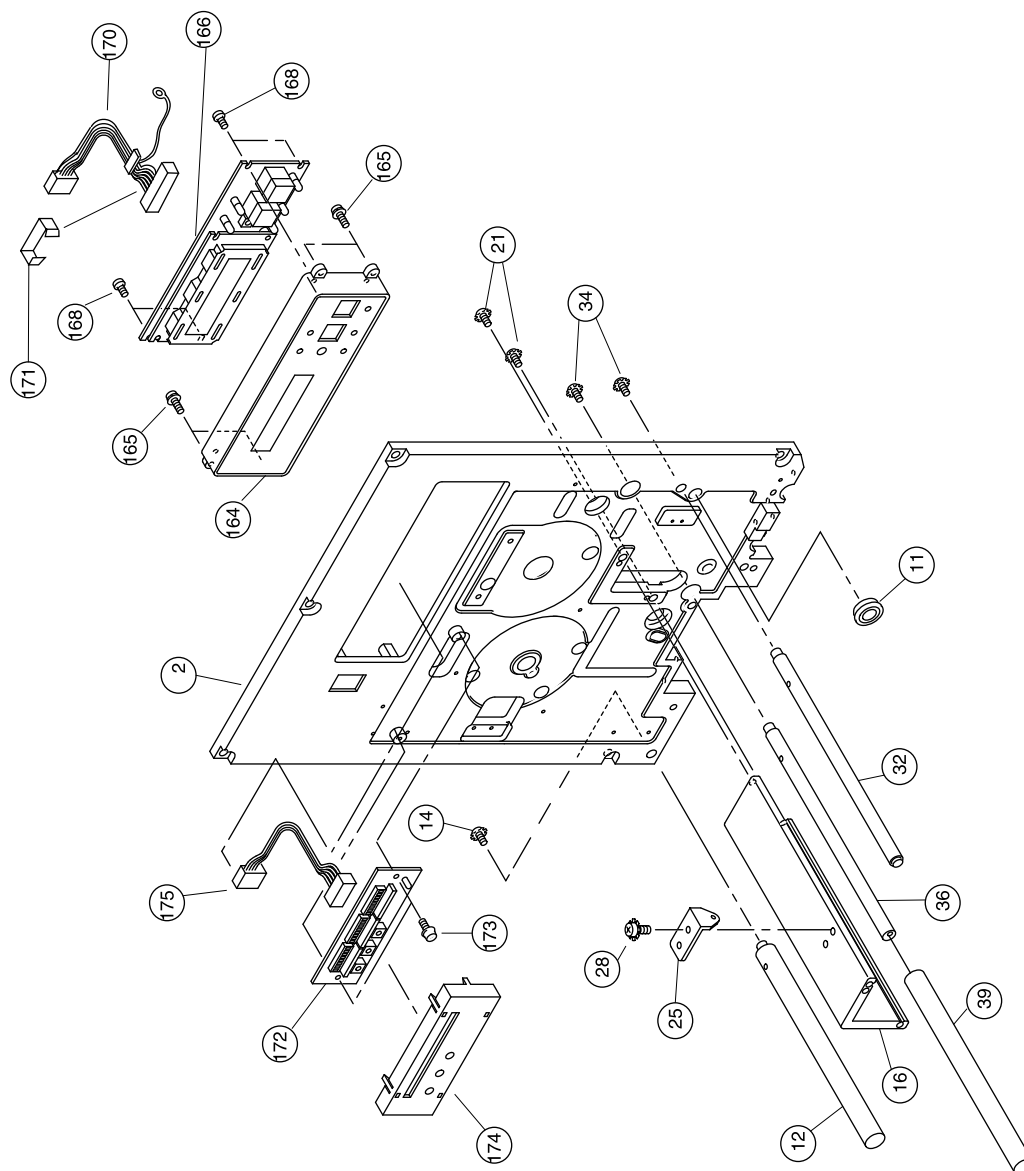
10.1 Overview

Item breakdowns are included for the M-8485Se Printer:

- *Frame Assembly*
- *Print Head Assembly*
- *Ribbon Assembly*
- *Feed Roller Assembly*
- *Pressure Roller Assembly*
- *Cover Assembly*
- *Main PCB Assembly*
- *Check PCB Assembly*

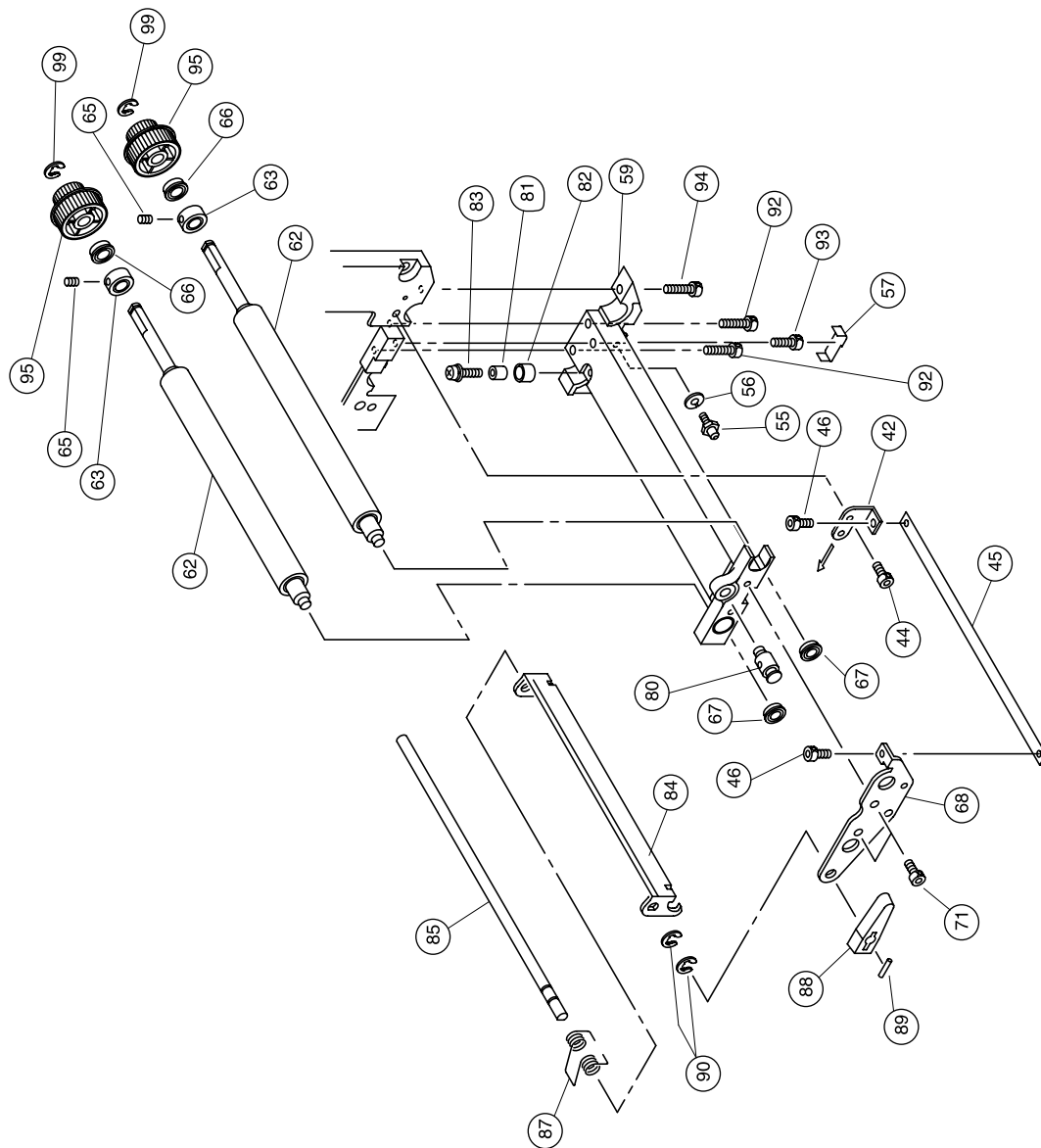
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10.2 Frame Assembly



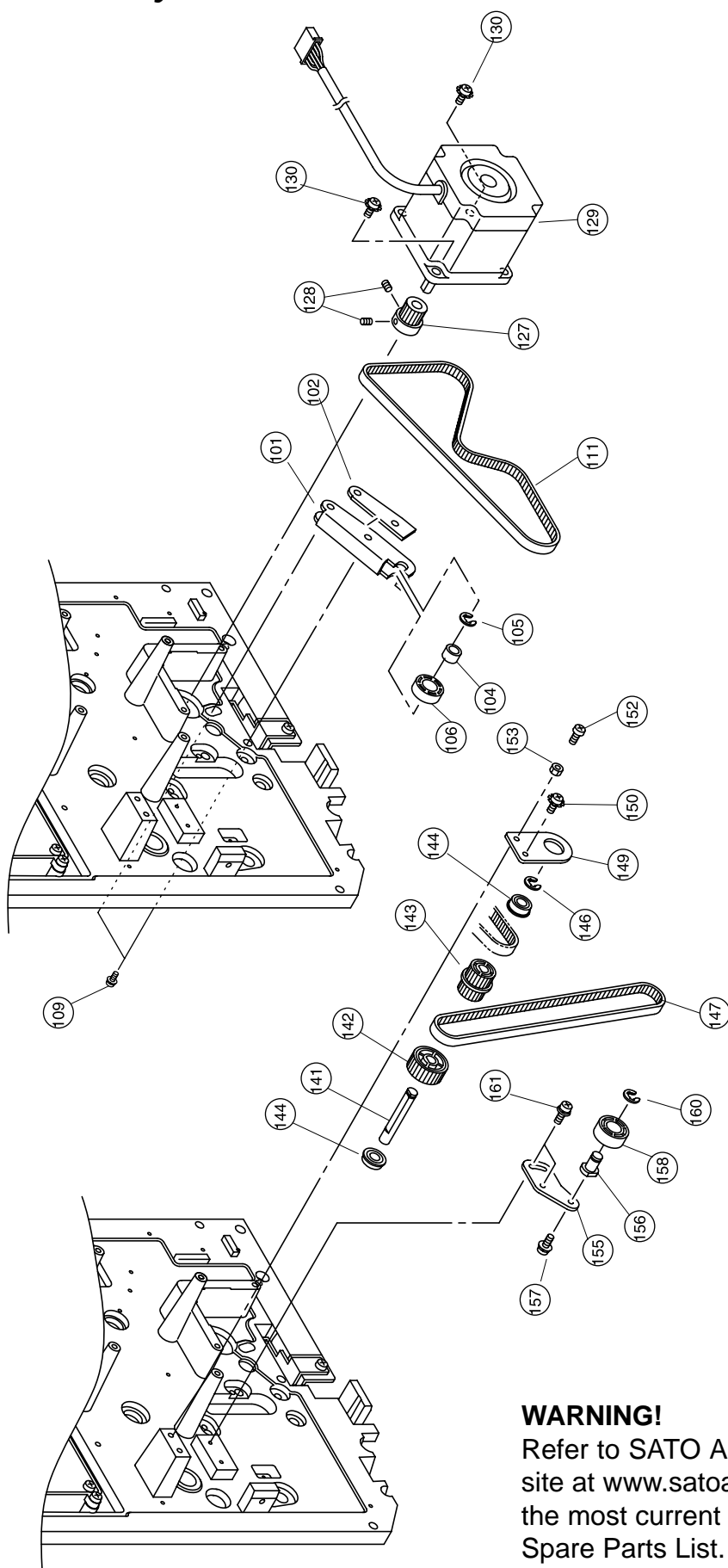
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Frame Assembly



WARNING! Refer to SATO AMERICA'S Web site at www.satoamerica.com for the most current data for the Spare Parts List.

Frame Assembly



WARNING!

Refer to SATO AMERICA'S Web site at www.satoamerica.com for the most current data for the Spare Parts List.

Frame Assembly

| ITEM NO. | CODE | DESCRIPTION | QTY |
|----------|-----------|-----------------------|-----|
| 2 | PL1730700 | ENGINE FRAME | 1 |
| 11 | PT2108006 | DRY METAL | 1 |
| 12 | PB0540101 | GUIDE POST | 1 |
| 14 | MC0401022 | PAN HEAD SCREW | 1 |
| 16 | PR1730500 | STAY | 1 |
| 21 | MC0401222 | PAN HEAD SCREW | 2 |
| 25 | PA3732500 | SPRING BRACKET | 1 |
| 28 | MC0300622 | PAN HEAD SCREW | 1 |
| 32 | PB0731500 | SHAFT (SUPPORT) | 1 |
| 34 | MC0401022 | PAN HEAD SCREW | 2 |
| 36 | PB0732800 | SHAFT (RIBBON ADJUST) | 1 |
| 39 | PR1730300 | ROLLER | 1 |
| 42 | PA3736200 | DISPENSE BAR BRACKET | 1 |
| 44 | MN0300824 | HEX SOCKET BOLT | 1 |
| 45 | PD1731300 | DISPENSE BAR | 1 |
| 46 | MN0300624 | HEX SOCKET BOLT | 2 |
| 55 | PB0733500 | SHAFT (HOLDER) | 1 |
| 56 | NB0040022 | SPRING WASHER | 1 |
| 57 | PA4730500 | PLATE SPRING | 1 |
| 59 | PL1730800 | PLATEN FRAME | 1 |
| 62 | PR0730100 | PLATEN ROLLER | 2 |
| 63 | PB2730100 | COLLAR | 2 |
| 65 | MJ1300424 | HEX SOCKET SET SCREW | 2 |
| 66 | PT1112060 | BALL SUPPORTER | 2 |
| 67 | PT1109050 | BALL SUPPORTER | 2 |
| 68 | PA3736301 | SUPPORTER CLAMP (A) | 1 |
| 71 | MN0400824 | HEX SOCKET BOLT | 2 |
| 80 | PB0730500 | POST (LATCH) | 1 |
| 81 | PB2740100 | COLLAR | 1 |
| 82 | PE3720300 | ROLLER | 1 |
| 83 | MD4301222 | PAN HEAD SCREW | 1 |
| 84 | PA3736400 | LATCH HANDLE (HOLDER) | 1 |
| 85 | PB0733400 | SHAFT (LATCH HANDLE) | 1 |
| 87 | PC3730101 | SPRING (LATCH HANDLE) | 1 |
| 88 | PE1730700 | HANDLE (C) | 1 |

WARNING! Refer to SATO AMERICA'S Web site at www.satoamerica.com for the most current data for the Spare Parts List.

Frame Assembly

| ITEM NO. | CODE | DESCRIPTION | QTY |
|----------|-----------|----------------------|-----|
| 89 | NG2201030 | PARALLEL PIN | 1 |
| 90 | ND0030030 | E-SNAP RING | 2 |
| 92 | MN0402524 | HEX SOCKET BOLT | 2 |
| 93 | MN0401624 | HEX SOCKET BOLT | 1 |
| 94 | MN0401024 | HEX SOCKET BOLT | 1 |
| 95 | PE8730200 | PULLEY (24/36) | 2 |
| 99 | ND0040030 | E-SNAP RING | 2 |
| 101 | PA3734800 | PULLEY BRACKET | 1 |
| 102 | PA2730700 | PLATE NUT | 1 |
| 104 | PB0731600 | SHAFT (ROLLER) | 1 |
| 105 | ND0040030 | E-SNAP RING | 1 |
| 106 | PR1730600 | TENSION ROLLER | 1 |
| 109 | MD4402022 | PAN HEAD SCREW | 1 |
| 111 | PT8190064 | TIMING BELT | 1 |
| 127 | PL1720100 | MOTOR PULLEY (20) | 1 |
| 128 | MJ1400524 | HEX SOCKET SET SCREW | 2 |
| 129 | RH1730600 | STEPPER MOTOR ASSY) | 1 |
| 130 | MC0401222 | PAN HEAD SCREW | 2 |
| 141 | PB0731701 | SHAFT (IDLE) | 1 |
| 142 | PE8730100 | GEAR | 1 |
| 143 | PE8730300 | PULLEY (24) | 1 |
| 144 | PT1112060 | BALL SUPPORTER | 2 |
| 146 | ND0040030 | E-SNAP RING | 1 |
| 147 | PT8150064 | TIMING BELT | 1 |
| 149 | PA1730500 | SHAFT BRACKET | 1 |
| 150 | MC0401022 | PAN HEAD SCREW | 2 |
| 152 | MT1400722 | PAN HEAD SCREW | 1 |
| 153 | MA0401622 | HEX NUT | 1 |
| 155 | PA1730700 | TENSION BRACKET | 1 |
| 156 | PB0730600 | POST (TENSION) | 1 |
| 157 | MD4400822 | PAN HEAD SCREW | 1 |
| 158 | PR1730600 | TENSION ROLLER | 1 |
| 160 | ND0040030 | E-SNAP RING | 1 |
| 161 | MD4300822 | PAN HEAD SCREW | 2 |
| 164 | PR4730501 | KEYBOARD COVER | 1 |

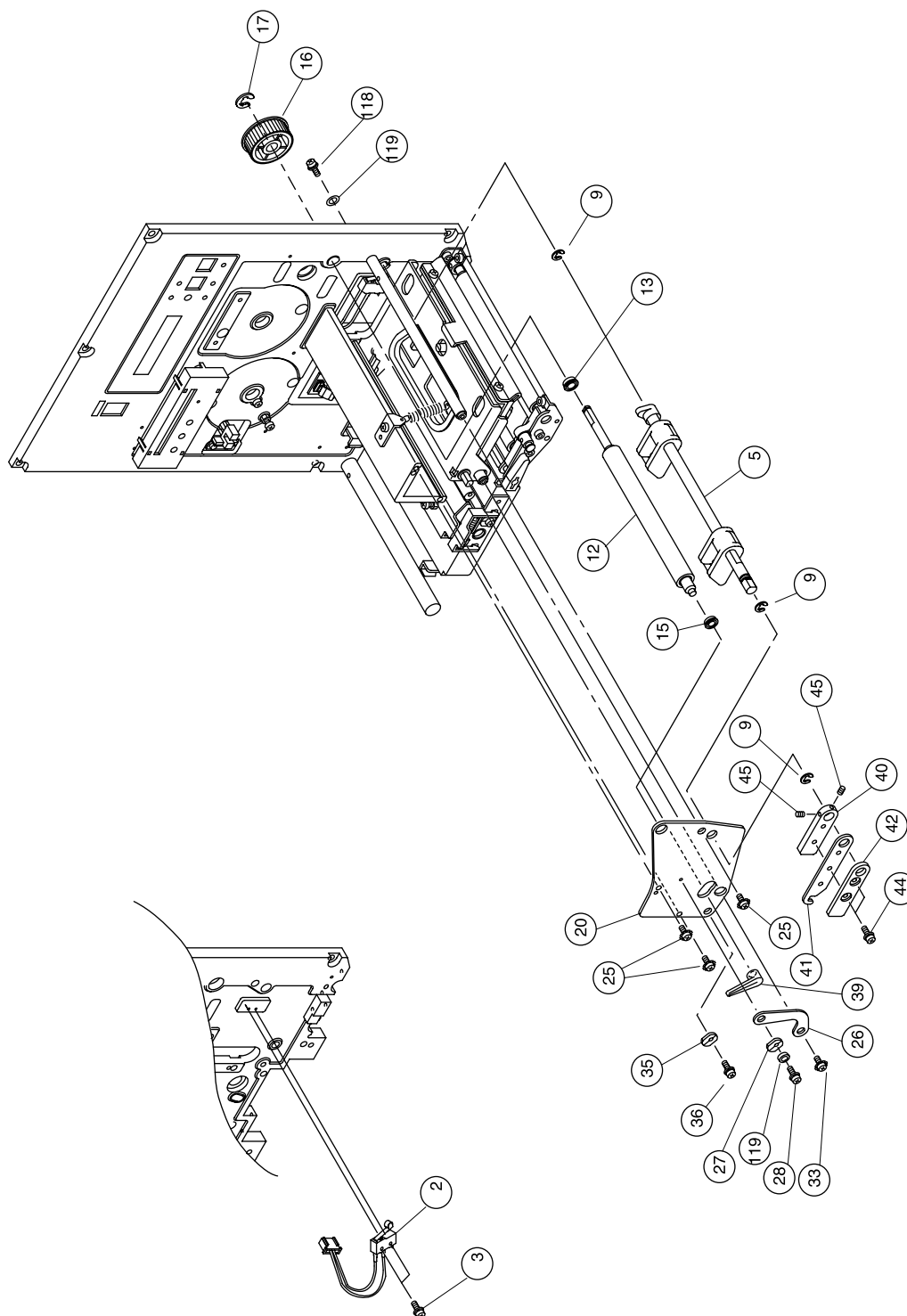
WARNING! Refer to SATO AMERICA'S Web site at www.satoamerica.com for the most current data for the Spare Parts List.

Frame Assembly

| ITEM NO. | CODE | DESCRIPTION | QTY |
|----------|-----------|-----------------------|-----|
| 165 | MD4301222 | PAN HEAD SCREW | 4 |
| 166 | RJ2730203 | KEY PCB SET | 1 |
| 168 | MH0300821 | PAN HEAD P TITE SCREW | 4 |
| 170 | RH1731300 | PSW CABLE | 1 |
| 171 | PA3739900 | CONNECTOR LOCK | 1 |
| 172 | RJ2730100 | DSW PCB SET | 1 |
| 173 | MD3300822 | PAN HEAD SCREW | 2 |
| 174 | PH0730200 | DIP SWITCH COVER | 1 |
| 175 | RH1731600 | DSW CABLE SET | 1 |

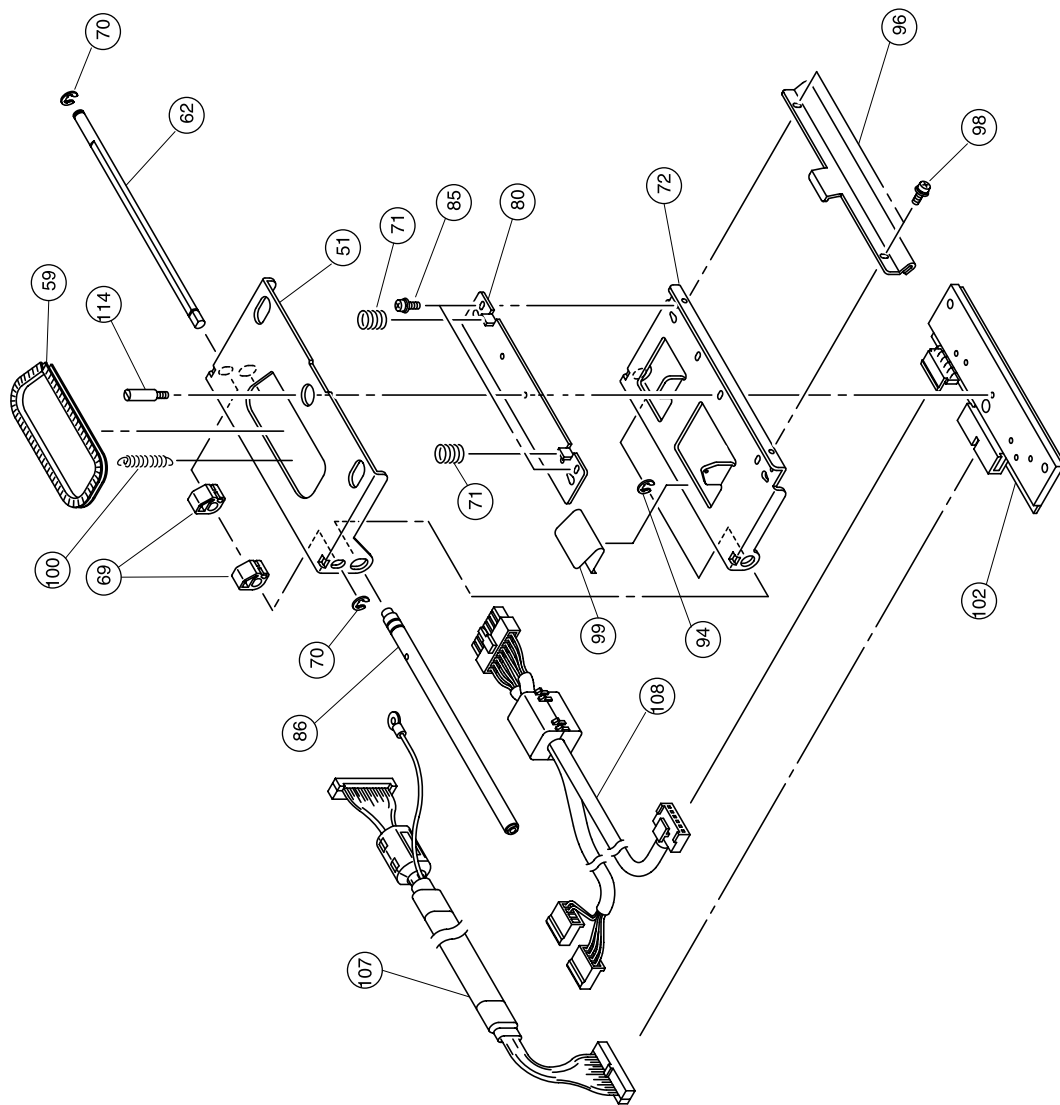
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10.3 Print Head Assembly



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Print Head Assembly



WARNING! Refer to SATO AMERICA'S Web site at www.satoamerica.com for the most current data for the Spare Parts List.

Print Head Assembly

| ITEM NO. | CODE | DESCRIPTION | QTY |
|----------|-----------|----------------------|-----|
| 2 | RH1731100 | SEN5 CABLE | 1 |
| 3 | MD3201221 | PAN HEAD SCREW | 2 |
| 5 | PR1730700 | PRESSURE CAM | 1 |
| 9 | ND0060030 | E-SNAP RING | 3 |
| 12 | PR0730200 | FEED ROLLER | 1 |
| 13 | PT1112060 | BALL SUPPORTER | 1 |
| 15 | PT1109050 | BALL SUPPORTER | 1 |
| 16 | PE8730100 | GEAR | 1 |
| 17 | ND0040030 | E-SNAP RING | 1 |
| 20 | PA2730200 | HEAD FRAME | 1 |
| 25 | MC0401022 | PAN HEAD SCREW | 3 |
| 26 | PA1730300 | PLATE (ADJUST) | 1 |
| 27 | PL2720100 | ADJUST COLLAR | 1 |
| 28 | MD4300822 | PAN HEAD SCREW | 1 |
| 33 | MC0401022 | PAN HEAD SCREW | 1 |
| 35 | PL2730100 | ADJUST COLLAR | 1 |
| 36 | MD4401022 | PAN HEAD SCREW | 1 |
| 39 | PE1730400 | HANDLE (B) | 1 |
| 40 | PD1730600 | HANDLE (A) | 1 |
| 41 | PA2730600 | LATCH HANDLE (C) | 1 |
| 42 | PD1731200 | HANDLE (B) | 1 |
| 44 | MD4301022 | PAN HEAD SCREW | 2 |
| 45 | MJ1300424 | HEX SOCKET SET SCREW | 2 |
| 51 | PA3732300 | HEAD BRACKET (UPPER) | 1 |
| 59 | PV9730200 | BUSH (205) | 1 |
| 62 | PB0731400 | SHAFT (ADJUST CAM) | 1 |
| 69 | PE1730300 | ADJUST CAM | 2 |

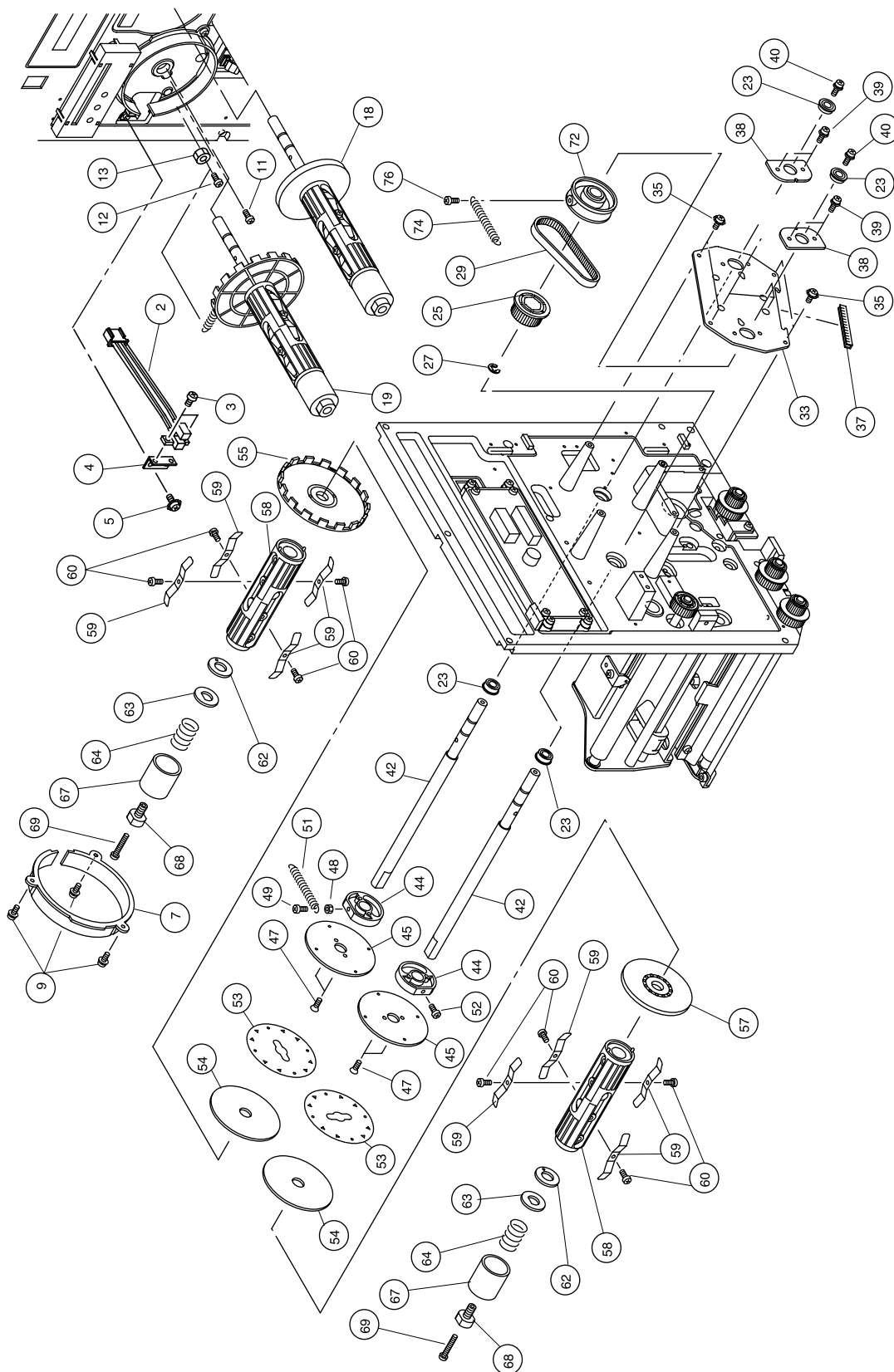
WARNING! Refer to SATO AMERICA'S Web site at www.satoamerica.com for the most current data for the Spare Parts List.

Print Head Assembly

| ITEM NO. | CODE | DESCRIPTION | QTY |
|----------|-----------|-------------------------|-----|
| 70 | ND0050030 | E-SNAP RING | 2 |
| 71 | PC1730200 | SPRING (HEAD) | 2 |
| 72 | PR4731100 | HEAD BRACKET (LOWER) | 1 |
| 80 | PR1730200 | ADJUST PLATE | 1 |
| 85 | MD4300622 | PAN HEAD SCREW | 2 |
| 86 | PB0731100 | SHAFT (HEAD BRACKET) | 1 |
| 94 | ND0070030 | E-SNAP RING | 2 |
| 96 | PA3732100 | RIBBON PLATE | 1 |
| 98 | MD3250522 | PAN HEAD SCREW | 2 |
| 99 | PA4730401 | PLATE SPRING (HEAD CAM) | 1 |
| 100 | PC0730200 | SPRING (HEAD OPEN) | 1 |
| 102 | GH000781A | PRINT HEAD | 1 |
| 107 | RH1731200 | HDS CABLE | 1 |
| 108 | RH1727100 | HDP CABLE | 1 |
| 114 | PB5730300 | SCREW (HEAD) | 1 |
| 118 | MC0401022 | PAN HEAD SCREW | 1 |
| 119 | NA1030022 | PLAIN WASHER | 1 |

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10.4 Ribbon Assembly



WARNING! Refer to SATO AMERICA'S Web site at www.satoamerica.com for the most current data for the Spare Parts List.

Ribbon Assembly

| ITEM NO. | CODE | DESCRIPTION | QTY |
|----------|-----------|-------------------------|-----|
| 2 | RH1730400 | SEN4 CABLE | 1 |
| 3 | MA0300622 | PAN HEAD SCREW | 2 |
| 4 | PA3730200 | SENSOR BRACKET (RIBBON) | 1 |
| 5 | MC0301022 | PAN HEAD SCREW | 1 |
| 7 | PE6720100 | DISK PLATE COVER | 1 |
| 9 | MD4300622 | PAN HEAD SCREW | 3 |
| 11 | MD3300822 | PAN HEAD SCREW | 1 |
| 12 | MA0301022 | PAN HEAD SCREW | 1 |
| 13 | MT1300522 | HEX NUT | 1 |
| 18 | RC2730200 | RIBBON SUB (REWIND) | 1 |
| 19 | RC2730300 | RIBBON SUB (UNWIND) | 1 |
| 23 | PT1112080 | BALL SUPPORTER | 4 |
| 25 | PR1730800 | PULLEY (40) | 1 |
| 27 | ND0060030 | E-SNAP RING | 2 |
| 29 | PT8085048 | TIMING BELT | 1 |
| 33 | PA1730600 | RIBBON FRAME | 1 |
| 35 | MC0401022 | PAN HEAD SCREW | 4 |
| 37 | PV9730100 | BUSH (48) | 1 |
| 38 | PA1731000 | ADJUST PLATE | 2 |
| 39 | MD4300622 | PAN HEAD SCREW | 4 |
| 40 | MD4400822 | PAN HEAD SCREW | 2 |
| 42 | PB0731200 | SHAFT RIBBON | 2 |
| 44 | PE4720200 | PLATE HOLDER BOSS | 2 |
| 45 | PA0730100 | GUIDE PLATE | 2 |
| 47 | MH1250621 | FLAT HEAD P TITE SCREW | 4 |
| 48 | MT1300522 | HEX NUT | 1 |
| 49 | MA0302522 | PAN HEAD SCREW | 1 |

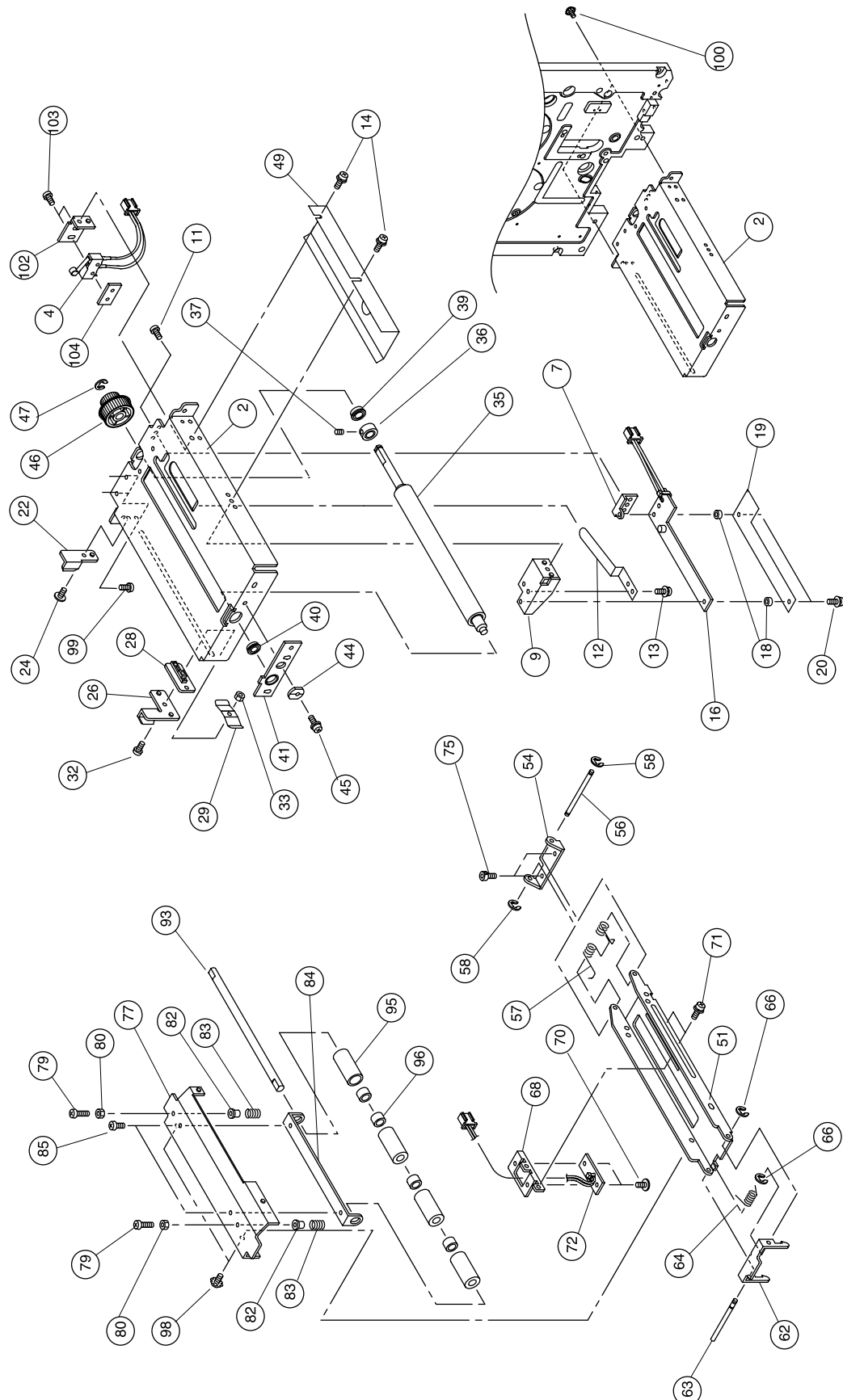
WARNING! Refer to SATO AMERICA'S Web site at www.satoamerica.com for the most current data for the Spare Parts List.

Ribbon Assembly

| ITEM NO. | CODE | DESCRIPTION | QTY |
|----------|-----------|-----------------------|-----|
| 51 | PC0730100 | SPRING (BACK) | 1 |
| 52 | MA0301821 | PAN HEAD SCREW | 1 |
| 53 | PA0730200 | HOLD PLATE | 2 |
| 54 | PA0680300 | FRICTION WASHER | 2 |
| 55 | PE7720100 | DISK PLATE (A) | 1 |
| 57 | PE1681100 | GUIDE PLATE (B) | 1 |
| 58 | PR1730900 | RIBBON BOSS | 2 |
| 59 | PA4690900 | SPRING | 8 |
| 60 | MH0300521 | PAN HEAD P TITE SCREW | 8 |
| 62 | PT2301020 | OIL LESS METAL WASHER | 2 |
| 63 | PA0680400 | DISK | 2 |
| 64 | PC1730100 | SPRING | 2 |
| 67 | PE2730100 | STOPPER COLLAR | 2 |
| 68 | PB5730100 | ADJUST SCREW | 2 |
| 69 | MA0302522 | PAN HEAD SCREW | 2 |
| 72 | PR1734000 | PULLEY | 1 |
| 74 | PC0740200 | SPRING (BACK) | 1 |
| 76 | MH0300821 | PAN HEAD SCREW | 1 |

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10.5 Feed Roller Assembly



WARNING! Refer to SATO AMERICA'S Web site at www.satoamerica.com for the most current data for the Spare Parts List.

Feed Roller Assembly

| ITEM NO. | CODE | DESCRIPTION | QTY |
|----------|-----------|----------------------|-----|
| 2 | PR4730100 | PAPER GUIDE BRACKET | 1 |
| 4 | RH1731500 | SEN7 CABLE | 1 |
| 7 | PA3730500 | PCB BRACKET (C) | 1 |
| 9 | PA3730600 | PCB BRACKET (D) | 1 |
| 11 | MC0300622 | PAN HEAD SCREW | 1 |
| 12 | PA4730200 | LIFT SPRING | 1 |
| 13 | MD4300622 | PAN HEAD SCREW | 1 |
| 14 | MD4300622 | PAN HEAD SCREW | 2 |
| 16 | RH1730900 | SEN1 CABLE | 1 |
| 18 | PT9540500 | SPACER | 2 |
| 19 | PA1730800 | PCB PROTECTOR | 1 |
| 20 | MD4300822 | PAN HEAD SCREW | 2 |
| 22 | PA3731500 | PAPER GUIDE (L) | 1 |
| 24 | MJ9300622 | THIN HEAD SCREW | 1 |
| 26 | PA3731600 | SLIDE GUIDE | 1 |
| 28 | PE1730200 | SLIDER | 1 |
| 29 | PA4730100 | SLIDE SPRING | 1 |
| 32 | MA0301022 | PAN HEAD SCREW | 1 |
| 33 | MT1300522 | HEX NUT | 1 |
| 35 | PR0730100 | PLATEN ROLLER | 1 |
| 36 | PB2730100 | COLLAR | 1 |
| 37 | MJ1300424 | HEX SOCKET SET SCREW | 1 |
| 39 | PT1112060 | BALL SUPPORTER | 1 |
| 40 | PT1109050 | BALL SUPPORTER | 1 |
| 41 | PA1730100 | SUPPORTER CLAMP (B) | 1 |
| 44 | PL2720100 | ADJUST COLLAR | 1 |
| 45 | MD4300822 | PAN HEAD SCREW | 1 |
| 46 | PE8730200 | PULLEY (24/36) | 1 |
| 47 | ND0040030 | E-SNAP RING | 1 |
| 49 | PA3734600 | PAPER GUIDE | 1 |
| 51 | PA3731100 | PAPER LID (LOWER) | 1 |
| 54 | PA3734700 | LID BR | 1 |
| 56 | PB0731000 | SHAFT (LID) | 1 |
| 57 | PC2730200 | SPRING (OPEN) | 1 |
| 58 | ND0020030 | E-SNAP RING | 2 |

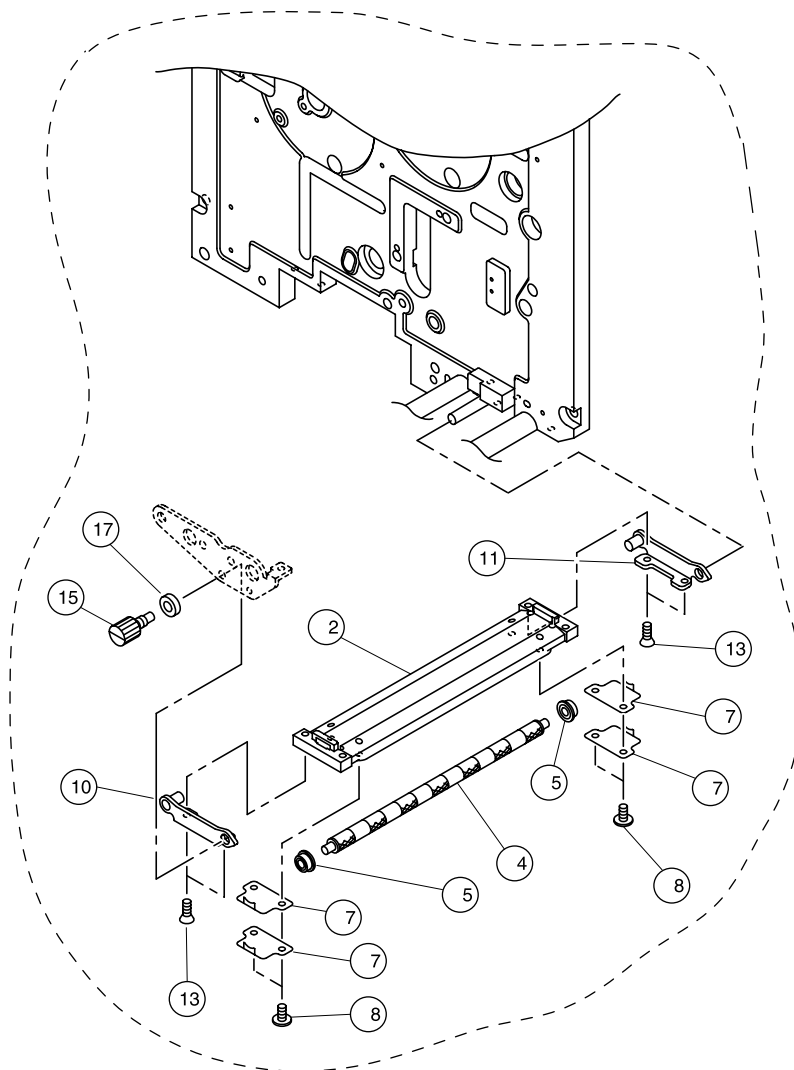
WARNING! Refer to SATO AMERICA'S Web site at www.satoamerica.com for the most current data for the Spare Parts List.

Feed Roller Assembly

| ITEM NO. | CODE | DESCRIPTION | QTY |
|----------|-----------|-------------------------|-----|
| 62 | PA3731700 | LATCH HANDLE | 1 |
| 63 | PB0730900 | SHAFT (LATCH) | 1 |
| 64 | PC2730100 | SPRING (LATCH) | 1 |
| 66 | ND0020030 | E-SNAP RING | 2 |
| 68 | PA3731200 | SENSOR BR (PITCH) | 1 |
| 70 | MD4300622 | PAN HEAD SCREW | 2 |
| 71 | MJ9300622 | THIN HEAD SCREW | 2 |
| 72 | RH1731000 | SEN2 CABLE | 1 |
| 75 | MN0300624 | HEX SOCKET SCREW | 2 |
| 77 | PA3731000 | PAPER LID (UPPER) | 1 |
| 79 | MA0301022 | PAN HEAD SCREW | 2 |
| 80 | MT1300522 | HEX NUT | 2 |
| 82 | PE2730300 | STOPPER COLLAR | 2 |
| 83 | PC1730300 | SPRING (PRESSURE) | 2 |
| 84 | PA3731300 | ROLLER BRACKET | 1 |
| 85 | MA0300422 | PAN HEAD SCREW | 2 |
| 93 | PB0730800 | SHAFT (PRESSURE ROLLER) | 1 |
| 95 | PE3720200 | ROLLER | 4 |
| 96 | PE3720500 | ROLLER | 4 |
| 98 | MC0300622 | PAN HEAD SCREW | 2 |
| 99 | MN0300824 | HEX SOCKET SCREW | 2 |
| 100 | MN0400824 | HEX SOCKET SCREW | 2 |
| 102 | PA3732700 | MICRO SWITCH BRACKET | 1 |
| 103 | MD3201221 | PAN HEAD SCREW | 2 |
| 104 | PA1732300 | NUT PLATE | 1 |

WARNING! Refer to SATO AMERICA'S Web site at www.satoamerica.com for the most current data for the Spare Parts List.

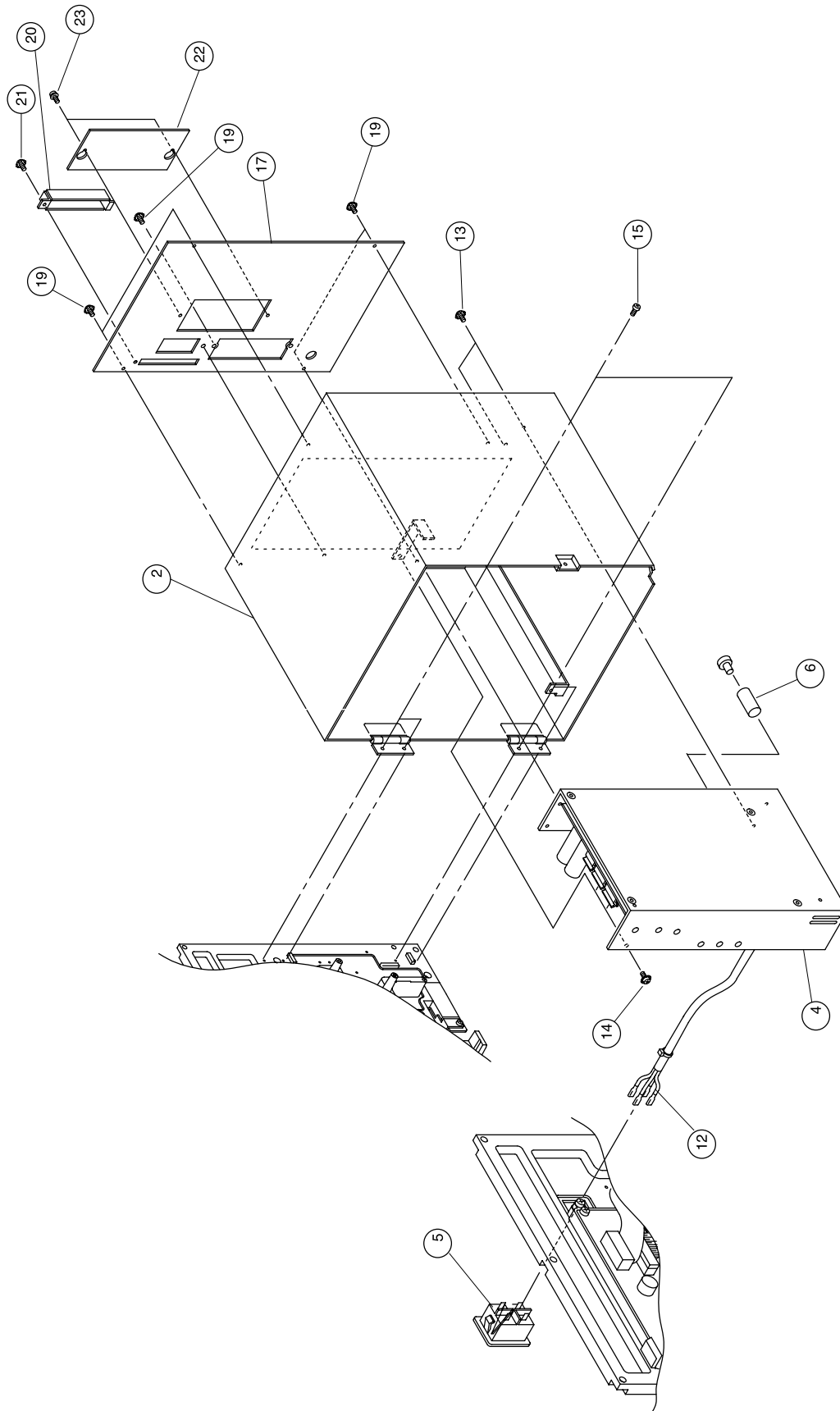
10.6 Pressure Roller Assembly



| ITEM NO. | CODE | DESCRIPTION | QTY |
|----------|-----------|--------------------------|-----|
| 2 | PL1730900 | ROLLER HOLDER (PRESSURE) | 1 |
| 4 | PB0731800 | PRESSURE ROLLER | 1 |
| 5 | PT1108040 | BALL SUPPORTER | 2 |
| 7 | PA4730300 | PLATE SPRING | 4 |
| 8 | MJ9300622 | THIN HEAD SCREW | 4 |
| 10 | PR1732800 | PLATE (HOLDER) (F) | 1 |
| 11 | PR1732900 | PLATE (HOLDER) (R) | 1 |
| 13 | MA1300822 | FLAT HEAD SCREW | 4 |
| 15 | PB0733601 | SCREW (HOLDER) | 1 |
| 17 | PE2730600 | COLLAR | 1 |

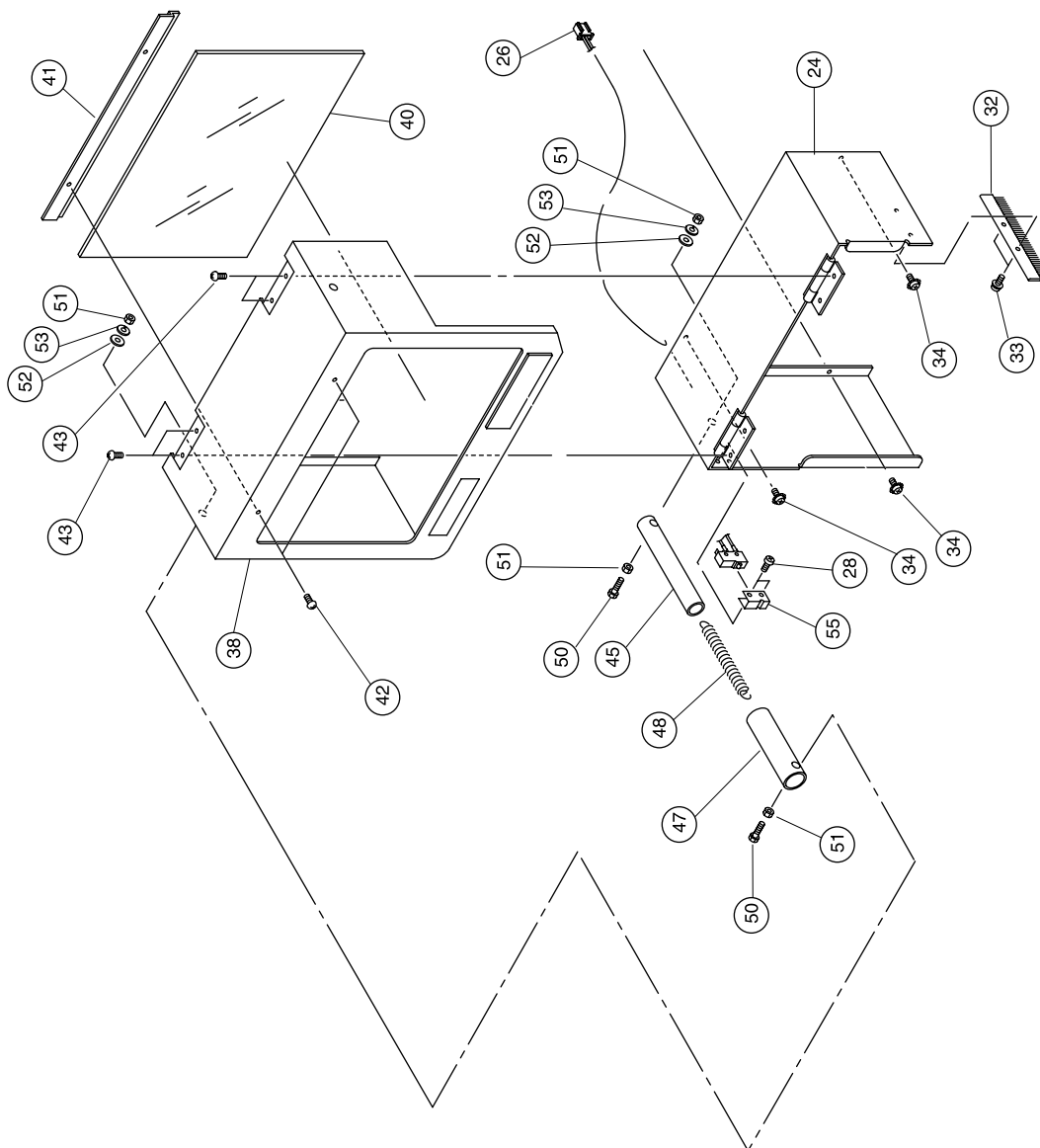
WARNING! Refer to SATO AMERICA'S Web site at www.satoamerica.com for the most current data for the Spare Parts List.

10.7 Cover Assembly



WARNING! Refer to SATO AMERICA'S Web site at www.satoamerica.com for the most current data for the Spare Parts List.

Cover Assembly



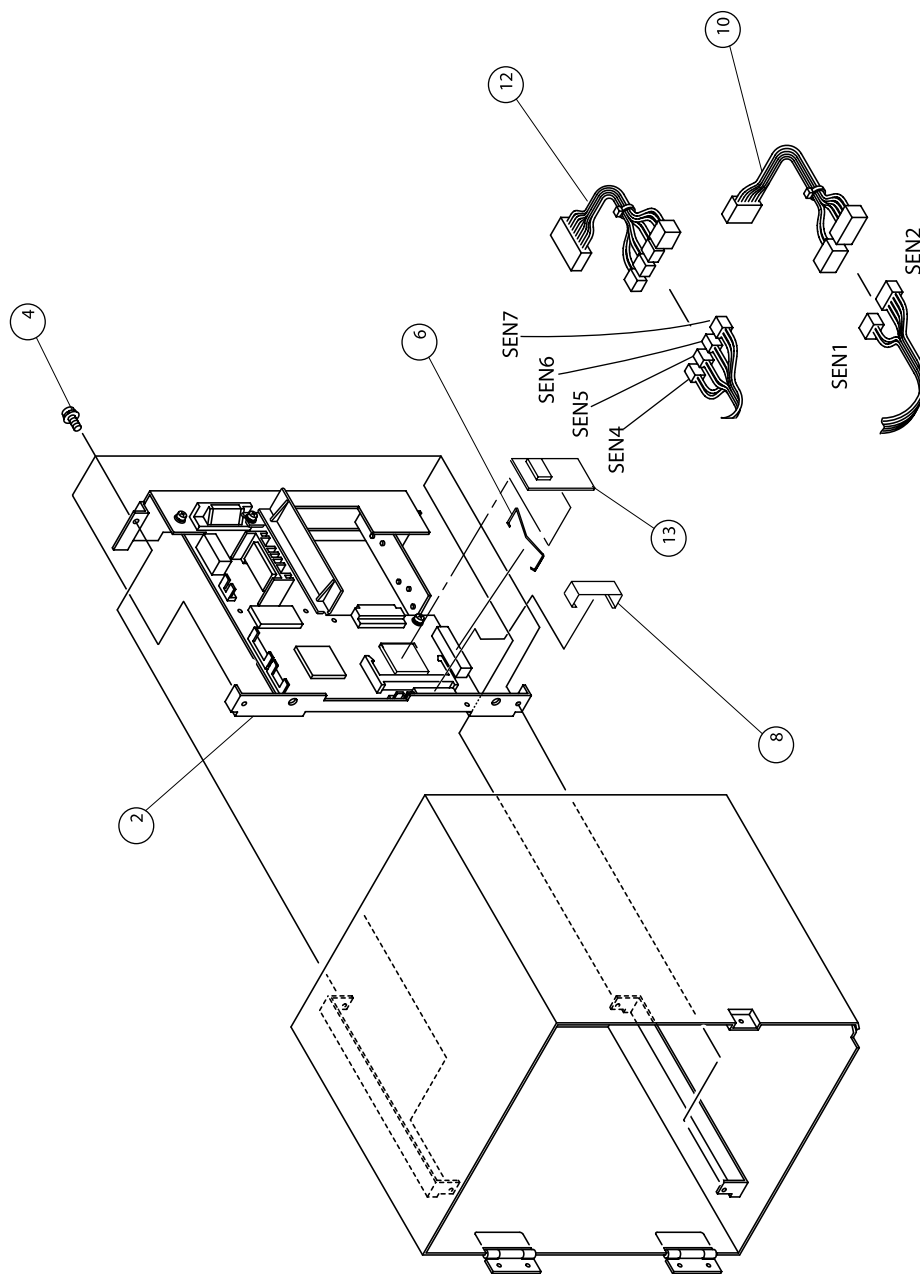
WARNING! Refer to SATO AMERICA'S Web site at www.satoamerica.com for the most current data for the Spare Parts List.

Cover Assembly

| ITEM NO. | CODE | DESCRIPTION | QTY |
|----------|-----------|-------------------|-----|
| 2 | PH1731701 | CLOSE COVER (A) | 1 |
| 4 | PR7730301 | POWER SUPPLY | 1 |
| 5 | GA300161A | POWER SWITCH | 1 |
| 6 | HD100311A | FUSE | 1 |
| 12 | RH1730500 | POW/SW CABLE | 1 |
| 13 | MC0301022 | PAN HEAD SCREW | 2 |
| 14 | MC0401022 | PAN HEAD SCREW | 1 |
| 15 | MC0301022 | PAN HEAD SCREW | 4 |
| 17 | PH1732601 | CLOSE COVER (B) | 1 |
| 19 | MC0300622 | PAN HEAD SCREW | 5 |
| 20 | PH1732800 | SUB COVER | 1 |
| 21 | MC0300622 | PAN HEAD SCREW | 1 |
| 22 | PH1732000 | CLOSE COVER (C) | 1 |
| 23 | MD4300822 | PAN HEAD SCREW | 2 |
| 24 | PR1731000 | COVER BRACKET | 1 |
| 26 | RH1730800 | SEN6 CABLE | 1 |
| 28 | MA0200821 | PAN HEAD SCREW | 2 |
| 32 | PR1340500 | ANTI STATIC BRUSH | 1 |
| 33 | MD4300622 | PAN HEAD SCREW | 2 |
| 34 | MC0301022 | PAN HEAD SCREW | 3 |
| 38 | PH1730601 | OPEN COVER (A) | 1 |
| 40 | PH2730100 | OPEN COVER (B) | 1 |
| 41 | PH1730700 | SET PLATE | 1 |
| 42 | MA7300625 | TRUSS SCREW | 2 |
| 43 | MA7300625 | TRUSS SCREW | 4 |
| 45 | PE6730300 | SP CASE (A) | 1 |
| 47 | PE6730400 | SP CASE (B) | 1 |
| 48 | PC0090300 | SPRING (COVER) | 1 |
| 50 | PB0013700 | SPRING SHAFT | 2 |
| 51 | MT3020621 | HEX NUT | 4 |
| 52 | NA1060022 | PLAIN WASHER | 2 |
| 53 | NB0060022 | SPRING WASHER | 2 |
| 55 | PA6730300 | COVER (SEN6) | 1 |

WARNING! Refer to SATO AMERICA'S Web site at www.satoamerica.com for the most current data for the Spare Parts List.

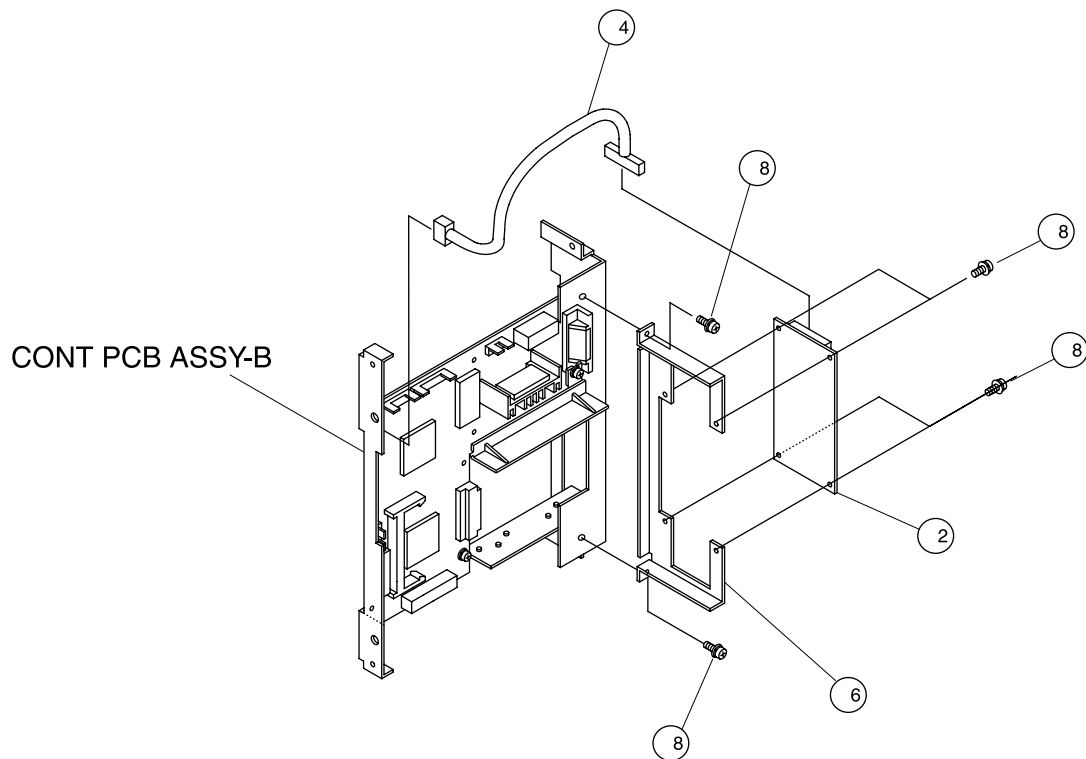
10.8 Main PCB Assembly



| ITEM NO. | CODE | DESCRIPTION | QTY |
|----------|-----------|-----------------------------|-----|
| 2 | RJ1733100 | MAIN PCB ASSEMBLY | 1 |
| 4 | MD4300622 | PAN HEAD SCREW | 4 |
| 6 | PC9730100 | SPRING (LOCK) | 1 |
| 8 | PA3739900 | CONNECTOR LOCK | 1 |
| 10 | RH1727300 | PITCH SENSOR RELAY CODE SET | 1 |
| 12 | RH1735100 | SENSOR RELAY CODE SET B | 1 |
| 13 | RJ7770200 | MEMORY PCB ASSEMBLY | 1 |

WARNING! Refer to SATO AMERICA'S Web site at www.satoamerica.com for the most current data for the Spare Parts List.

10.9 Check PCB Assembly



| ITEM NO. | CODE | DESCRIPTION | QTY |
|----------|-----------|-----------------|-----|
| 2 | RJ4731200 | CHECK PCB | 1 |
| 4 | RH4730000 | CHECK CABLE SET | 1 |
| 6 | PA3736600 | PCB BRACKET | 1 |
| 8 | MD4300822 | PAN HEAD SCREW | 6 |

WARNING! Refer to SATO AMERICA'S Web site at www.satoamerica.com for the most current data for the Spare Parts List.